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ABSTRACT

The Mechanized Information Center (MIC) at Ohio State University conducts retrospective and current awareness searches using data bases for agriculture, chemistry, education, psychology, and social sciences, as well as a multidisciplinary data base. Described in the report are the history and background of MIC, the data bases, information services, system, planning and operation of an integrated subject file, and marketing programs and studies. The report is supported by tables and figures, and is supplemented by five appendices. (WBC)

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Report Number MIC-AN-03

THIRD
ANNUAL REPORT
OF THE
MECHANIZED INFORMATION CENTER

FEBRUARY 1, 1973 THROUGH JANUARY 31, 1974

IR004277

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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FOREWORD

The Mechanized Information Center (MIC) was established at The Ohio State University in September 1970 and began operation in February 1971, when a grant was awarded by the Office of Science Information Service of the National Science Foundation. This third annual report describes the work performed under NSF sponsorship on Grant GN-27458, from February 1, 1973 through January 31, 1974.

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1	INTRODUCTION	1
1.1	Brief History	2
1.2	Organization	3
1.3	Information Services	7
2	DATA BASES	13
2.1	Multidisciplinary Data Bank	13
2.1.1	Current Awareness	14
2.1.1.1	Pandex Journals	14
2.1.1.2	ISI Journals	16
2.1.1.3	Government Reports	18
2.1.1.4	Book Titles	20
2.1.1.5	Conference Papers	22
2.1.2	Retrospective File	22
2.1.3	Library Location Table	25
2.1.4	Constructing the Data Base	28
2.2	Disciplinary Data Bases	31
2.2.1	Social Sciences	32
2.2.2	Education	34
2.2.2.1	Current Awareness	34
2.2.2.2	Retrospective	36
2.2.3	Chemistry	36
2.2.4	Agriculture	38
2.2.5	Psychology	40

SECTION	TITLE	PAGE
3	INFORMATION SERVICES	41
3.1	Current Awareness	45
3.1.1	Multidisciplinary	47
3.1.2	Chemistry	52
3.1.3	Education	52
3.1.4	Social Sciences	54
3.1.5	Agriculture	54
3.2	Retrospective Services	55
3.2.1	Three Retrospective Services	57
3.2.2	Similarities with Current Awareness	57
3.2.3	Differences in Profiling	58
3.2.4	Differences in Demand	60
3.3	Document Delivery	62
3.3.1	Library Resources	63
3.3.2	MIC First Page Service	67
3.4	Other Reference Services	69
4	SYSTEMS AND PROGRAMMING	71
4.1	Statistical and Cost Information System	72
4.1.1	The System Overview	72
4.1.2	Methods of Data Collection	74
4.1.3	Essential Features of the System	75
4.2	Social Science Current Awareness System	77
4.2.1	Data Base Conversion	77
4.2.2	Changes Required	78
4.3	Agriculture Current Awareness System	81
4.4	Psychological Abstracts Retrospective Search System	81

SECTION	TITLE	PAGE
4.4.1	Generation of Psychology Retrospective Data Base	83
4.4.2	Other System Modifications	84
4.5	Expansion of Retrospective Data Bases	84
4.5.1	Multidisciplinary Retrospective Service	84
4.5.2	Education Retrospective Data Base	87
4.6	Post Processor	87
4.7	System Studies	90
4.7.1	Computer Costs	90
4.7.2	Lag Time	90
4.7.3	Automatic Thesaurus	91
4.8	Compilation of a Technical Manual	92
4.9	Preprocessing of Pandex and NTIS Data Bases	92
4.10	Revised Calling Procedure for Mounting Multiple Disk Packs	95
4.11	Other Programs	96
4.11.1	Word Frequency Count for Retrospective Searches	96
4.11.2	Hit Frequency Distribution Program	97
4.11.3	Psychological Abstracts Thesaurus Print Program	100
4.11.4	Thesaurus Analysis	100
4.11.5	Current Programs Ordering Information	102
4.11.6	Data Base Quality Control	104
4.11.7	MIC User Directory Subsystem	104
4.12	Updated Search System Flowcharts	105
4.13	Braille Output	105
5	OPERATIONS	111
5.1	Tapes and Disk Packs	111

SECTION	TITLE	PAGE
5.2	Programs and Production	112
6	RESEARCH	114
6.1	Data Transmission	114
6.2	Evaluation of an Integrated Subject File	116
7	MARKETING PROGRAMS AND STUDIES	118
7.1	Advertising and Public Relations Program	118
7.2	Marketing Studies	121
7.2.1	Study Design and Methodology	123
7.2.1.1	Selection of Sample	123
7.2.1.2	Questionnaire Design	124
7.2.1.3	Respondents	126
7.2.2	Findings and Conclusion	127
8	RELATIONSHIPS	130
8.1	Relationships Within the Library	130
8.2	Relationships With Other Universities and Organizations	131
8.3	Relationships With Other Centers	132

APPENDICES

APPENDIX		PAGE
A	Social Sciences Data Base	134
B	Information Sheets on MIC Information Services	142
C	Psychological Abstracts Record Format	153
D	Procedure For Changing Mounted Disks	159
E	Schedule for MIC Production Jobs	161
F	Meetings, Visits, and Presentations	165

LIST OF FIGURES

FIGURE		PAGE
1	Organization Relationships of the Mechanized Information Center	4
2	Internal Organization of MIC	6
3	Current Awareness Profiles	9
4	Cumulative Retrospective Queries	10
5	Cumulative Number of Searches	12
6	Sample of LIBLOC Maintenance	29
7	Construction of the Multidisciplinary Data Bank	30
8	Profiles in the MIC Current Awareness Services	43
9	Number of Retrospective Searches Performed Quarterly	44
10	Sample Profile for the Multidisciplinary Current Awareness Service	49
11	Sample Notification Cards	51
12	Information Sheet Enclosed With Multidisciplinary Retrospective Searches	64
13	First Page Service	68
14	Overview of MIC Cost and Statistical Information System	73
15	Social Sciences Current Awareness Search System	80
16	Agriculture Current Awareness Search System	82
17	Generation of Psychology Retrospective Data Base	85
18	Psychology Retrospective Search System	86
19	Creation of Word Frequency Tape	98
20	Update of Word Frequency Tape	99
21	Excerpt of Psychological Abstracts Thesaurus	101
22	MIC User Directory System	106
23	Multidisciplinary Current Awareness Search System	107

FIGURE PAGE
24 Multidisciplinary Retrospective Search System 108
25 Education Current Awareness Search System 109
26 Education Retrospective Search System 110
27 MIC Flyer 119
28 Article from the Columbus Dispatch 122

LIST OF TABLES

TABLE PAGE
I Citations in the Multidisciplinary Current Awareness Data Bank 15
II Pandex Citations 17
III ISI Citations (Unduplicated By Pandex) 19
IV NTIS Citations 21
V MARC Citations 23
VI Conference Papers Citations 24
VII Library Locations and Codes 26
VIII Citations in the Social Sciences Current Awareness Data Bank 33
IX Citations in the Education Current Awareness Data Bank 35
X Citations in the Chemistry Current Awareness Data Base 37
XI Citations in the Agriculture Current Awareness Data Base 39
XII Number of Current Awareness Notifications Sent Out 46
XIII Number of Retrospective Notifications Sent Out 56
XIV Retrospective Searching in Third Project Year 59
XV Comparison of Use of Services by Undergraduate Students 61
XVI Revised Post Processor Decision Table 89

SECTION 1
INTRODUCTION

The main goal of the Mechanized Information Center (MIC) is to efficiently and effectively use machine-readable data bases to provide computer-based information services for students and faculty members of The Ohio State University and for outside organizations. In so doing, MIC is actively making the collection of The Ohio State University Libraries more accessible to, and opening up new sources of information for, all patrons.

In this third year of operation, which again was sponsored by the Office of Science Information Service of the National Science Foundation and by The Ohio State University, MIC sent out more than three million bibliographic references of journal articles, book titles, conference papers, and government reports, to people using the MIC services. One noticeable impact of the MIC services on campus has been the increased demand for government reports by students and faculty members.

Hugh C. Atkinson, Director of The OSU Libraries, has summarized the total impact of MIC as follows: "The MIC services pointed up the lack of physical access to government report literature through regular library channels. We had to order the PB and AD documents to overcome that lack. Further, the MIC operation has shown unequivocally that MIC can provide computer-based bibliographic access for the entire university community at a reasonable cost."

The increased acceptance of computer-based services has made itself felt in the increased demand for other services of the OSU Libraries, such as document delivery through the Interlibrary Loan Network.

This report, which specifically covers the activities of MIC's third year of operation, February 1, 1973 through January 31, 1974, also updates the data presented in the first two annual reports.[1]

1.1 BRIEF HISTORY

The number of MIC services and the number of patrons served have grown steadily since February 1, 1971, when the NSF grant began.

The first year of operation was purely developmental: (1) recruiting a staff, (2) determining the approaches to use in profiling and in providing services, (3) performing research, (4) developing software, and (5) performing marketing studies. By January 1972, MIC had performed 5,367 total searches.

The second year of operation was also mainly developmental. MIC moved into retrospective searching and into more disciplinary based services, did more research, and refined the systems.

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[1] See Annual Report of the Mechanized Information Center, February 1, 1971 through January 31, 1972, and Second Annual Report of the Mechanized Information Center, February 1, 1972 through January 31, 1973 (NTIS Report PB-230 075/4GA).

During this second year, MIC did more than 190,000 searches.

The third year, which is described in detail in this report, has been a transition from the developmental first and second phases to an expected fully operational fourth phase. The makeup of the staff changed to reflect the transition, for example, it was the last year for the faculty associates who were responsible for the pure research activities. Services were expanded; during the third year, MIC performed nearly 400,000 searches.

We expect this expansion to continue into the fourth year and beyond. During the first three years, the basic objectives of MIC have been:

(1) to select and acquire appropriate machine-readable bibliographic data bases

(2) to develop, adapt, and maintain software to maximize the service potential of the data bases, and then to freeze the final design of the software

(3) to perform user-oriented research into the operation, marketing, and management of information services and centers

(4) to demonstrate that the utility of existing library resources is increased by utilizing mechanized library services like those offered by MIC

(5) to enhance the role of The OSU Libraries as an active disseminator of information.

These objectives will continue into the fourth year of operation.

1.2 ORGANIZATION

MIC is administratively a department of the Public Services Division of the University Libraries. (See Figure 1.) The Director of MIC reports to the Assistant Director of Libraries,

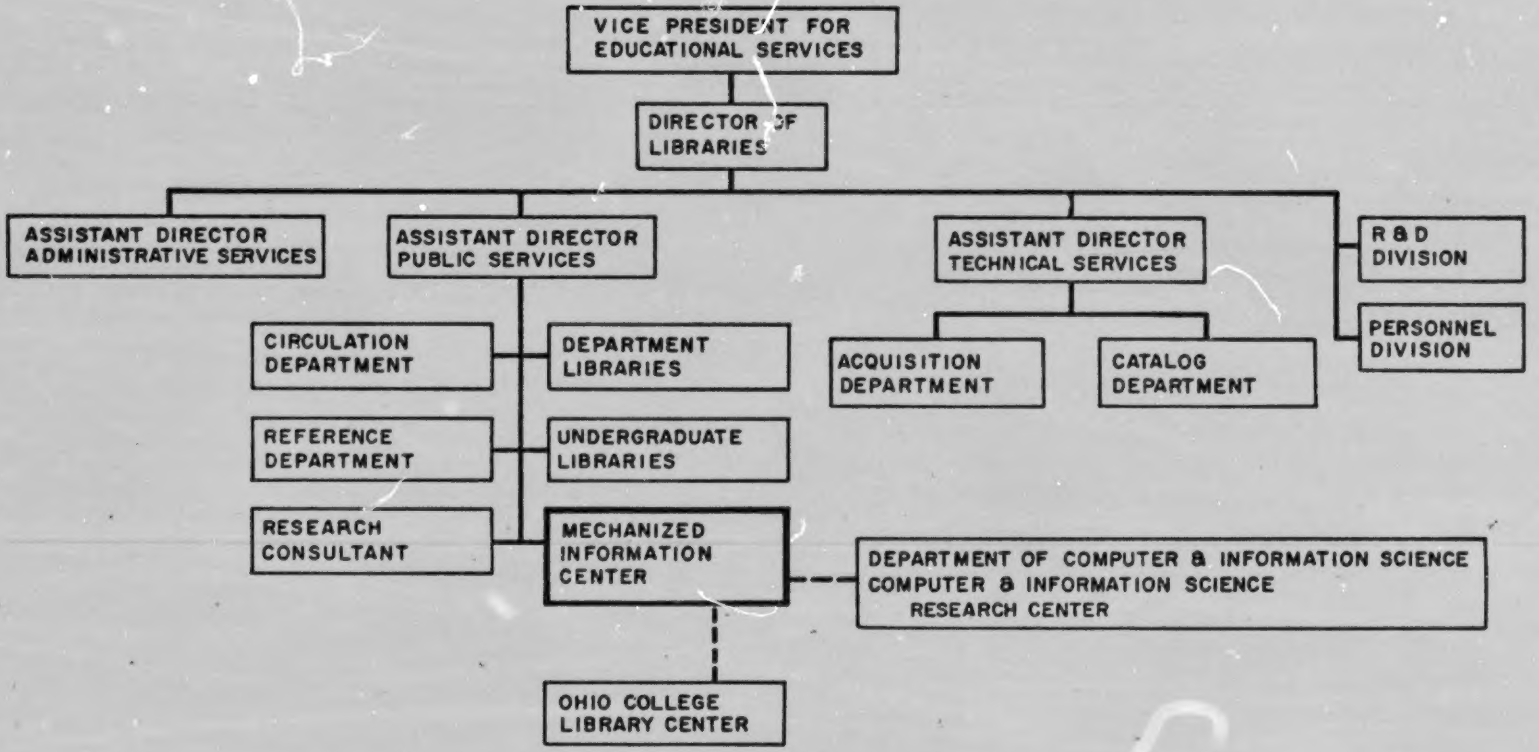
VICE PRESIDENT FOR EDUCATIONAL SERVICES
DIRECTOR OF LIBRARIES
ASSISTANT DIRECTOR ADMINISTRATIVE SERVICES
ASSISTANT DIRECTOR PUBLIC SERVICES
ASSISTANT DIRECTOR TECHNICAL SERVICES
R & D DIVISION
PERSONNEL DIVISION
CIRCULATION DEPARTMENT
DEPARTMENT LIBRARIES
ACQUISITION DEPARTMENT
CATALOG DEPARTMENT
REFERENCE DEPARTMENT
UNDERGRADUATE LIBRARIES
RESEARCH CONSULTANT
MECHANIZED INFORMATION CENTER
DEPARTMENT OF COMPUTER & INFORMATION SCIENCE
COMPUTER & INFORMATION SCIENCE RESEARCH CENTER
OHIO COLLEGE LIBRARY CENTER

FIGURE 1. ORGANIZATIONAL RELATIONSHIPS OF THE MECHANIZED INFORMATION CENTER

Public Services, and holds a joint faculty appointment in The Computer and Information Science Department and in the Libraries, as an Associate Professor.

The internal organization of MIC evolved during the first three years to that shown in Figure 2. In order to achieve greater overall development efficiency and to reflect the more operational outlook of MIC in the third year, MIC now has a Coordinator of Information Services to coordinate the activities of the Center. Staff members are in three functional areas of operation: Programming, Operations, Information Specialists.

Programming has remained together as a unit, headed by the same manager, since it was formed in 1971. It is responsible for developing the software and for maximizing the service potential of the data bases.

The Information Specialists and Operations groups work together as a unit to provide services, from finding out what information a patron wants to making sure he or she gets the output from the system on time. These staff members include reference librarians, who are the information specialists, a junior programmer, a keypunch operator, and nine part-time students. Information specialists are responsible for developing and monitoring patron profiles. The others are responsible for receipt of data base tapes, maintaining the tape library, mailing out notifications, providing the copy service, and taking care of all production jobs.

All the staff members work together on special ad hoc committees for such purposes as developing advertising programs and

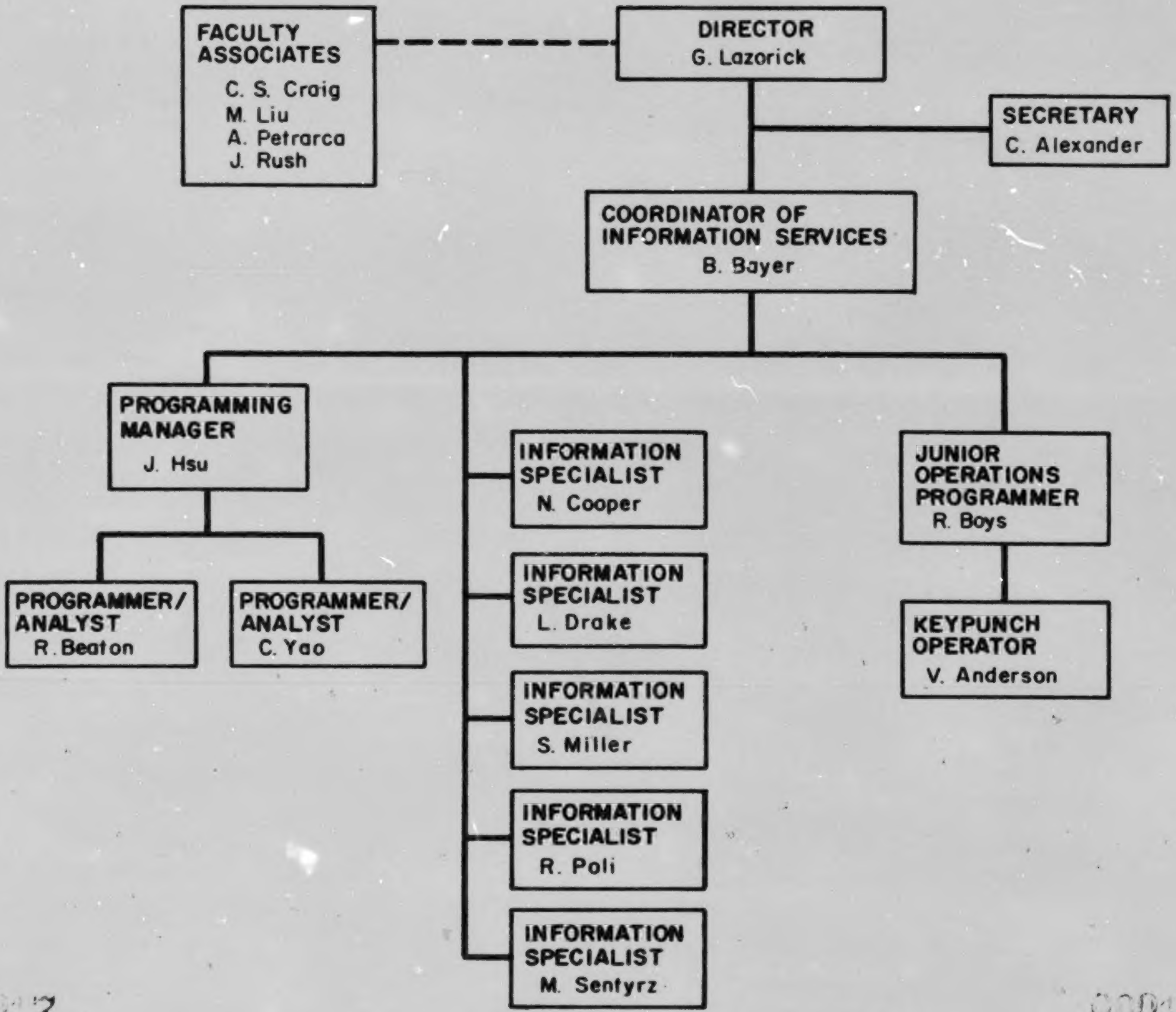

FIGURE 2. INTERNAL ORGANIZATION OF MIC

building good relationships with the other departments of the OSU Libraries.

1.3 INFORMATION SERVICES

In fulfilling its objectives, MIC provides current awareness and retrospective search services from large multidisciplinary data banks and from several disciplinary data bases. Through retrospective services, a person searches backfiles of information to bring him or her up-to-date and then uses current awareness to keep him or her up-to-date.

When MIC first began to offer services in 1971, the general philosophy was to put together a broad multidisciplinary data base that would serve many people with diverse interests. Once that was done, MIC could then add new services based on more discipline-oriented data bases.

Three new services were begun during the third project year:

(1) social science current awareness
(2) agriculture current awareness
(3) psychology retrospective

The new services supplemented these already existing ones:

(1) multidisciplinary current awareness
(2) multidisciplinary retrospective
(3) chemistry current awareness
(4) education current awareness
(5) education retrospective

The data banks which are searched for these services were chosen principally to help as many people as possible on the OSU campus. The multidisciplinary data bank covers such fields as aeronautics, astronomy, engineering, mathematics, and all the health sciences. The social science data bank covers a number of the disciplines in social sciences, including anthropology, ethnic studies, history, library science, management science, and sociology. The disciplinary data bases include education, chemistry, agriculture, and psychology.

The number of current awareness profiles in the MIC systems reached 3,208 by the end of January 1974, up 54% from the previous January. Five current awareness services were being offered, with multidisciplinary current awareness the most widely used.

The number of retrospective searches showed a much larger jump. MIC performed 5,936 searches during the twelve months of this project year. During the previous project year, retrospective searches were available for only seven months and 1,440 searches were performed.

Patron acceptance of the MIC services has been extremely good, as shown by the number of people who have taken advantage of them. (See Figures 3 and 4 for an indication of the growth in usage of the current awareness and retrospective search services, respectively. For details, see Section 3 of this report.)

The introduction of the three new services helped increase the number of MIC patrons. If you consider the number of people helped by MIC through computer-based systems and through other library services, MIC served approximately 10,000 patrons during the year.

Another indication of the growth of MIC services is the number of searches performed. The total was almost 400,000 searches,

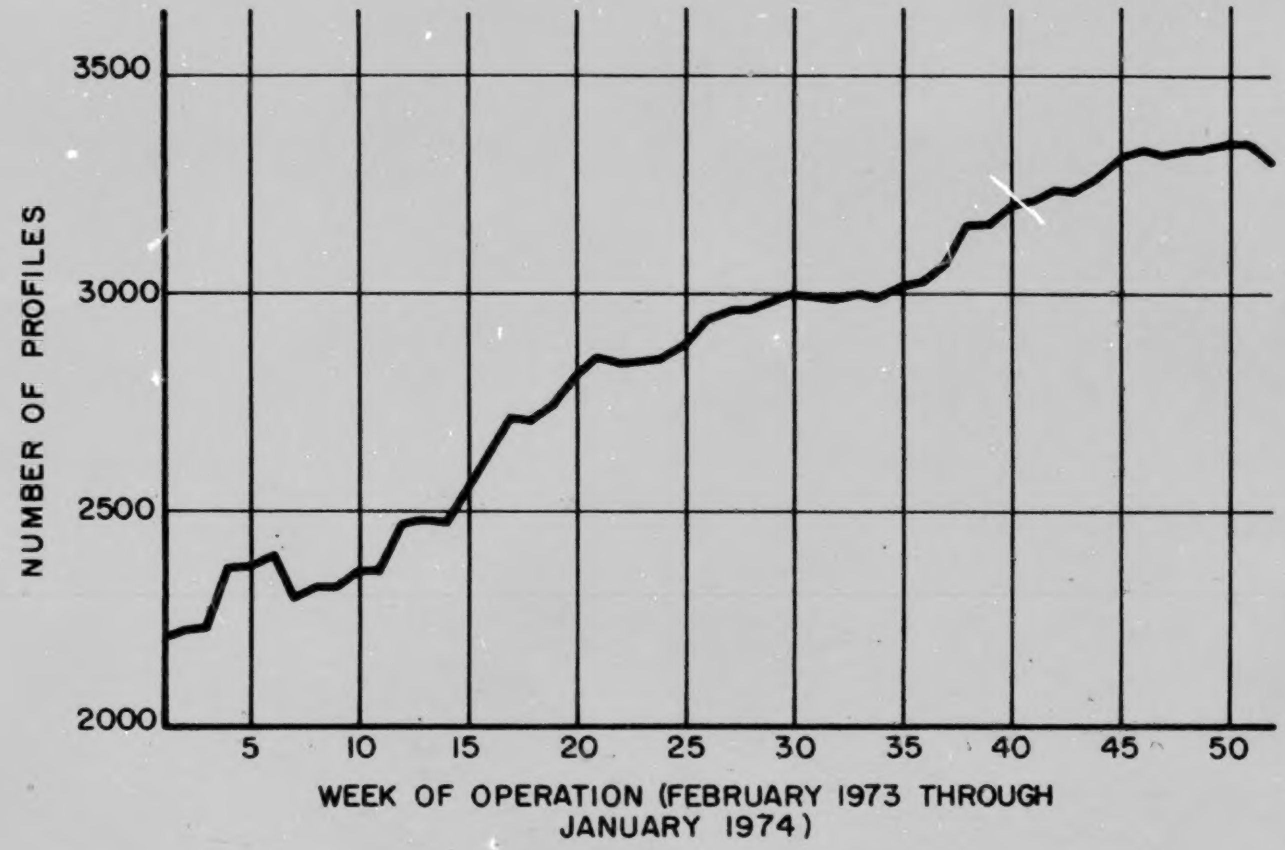

FIGURE 3. CURRENT AWARENESS PROFILES

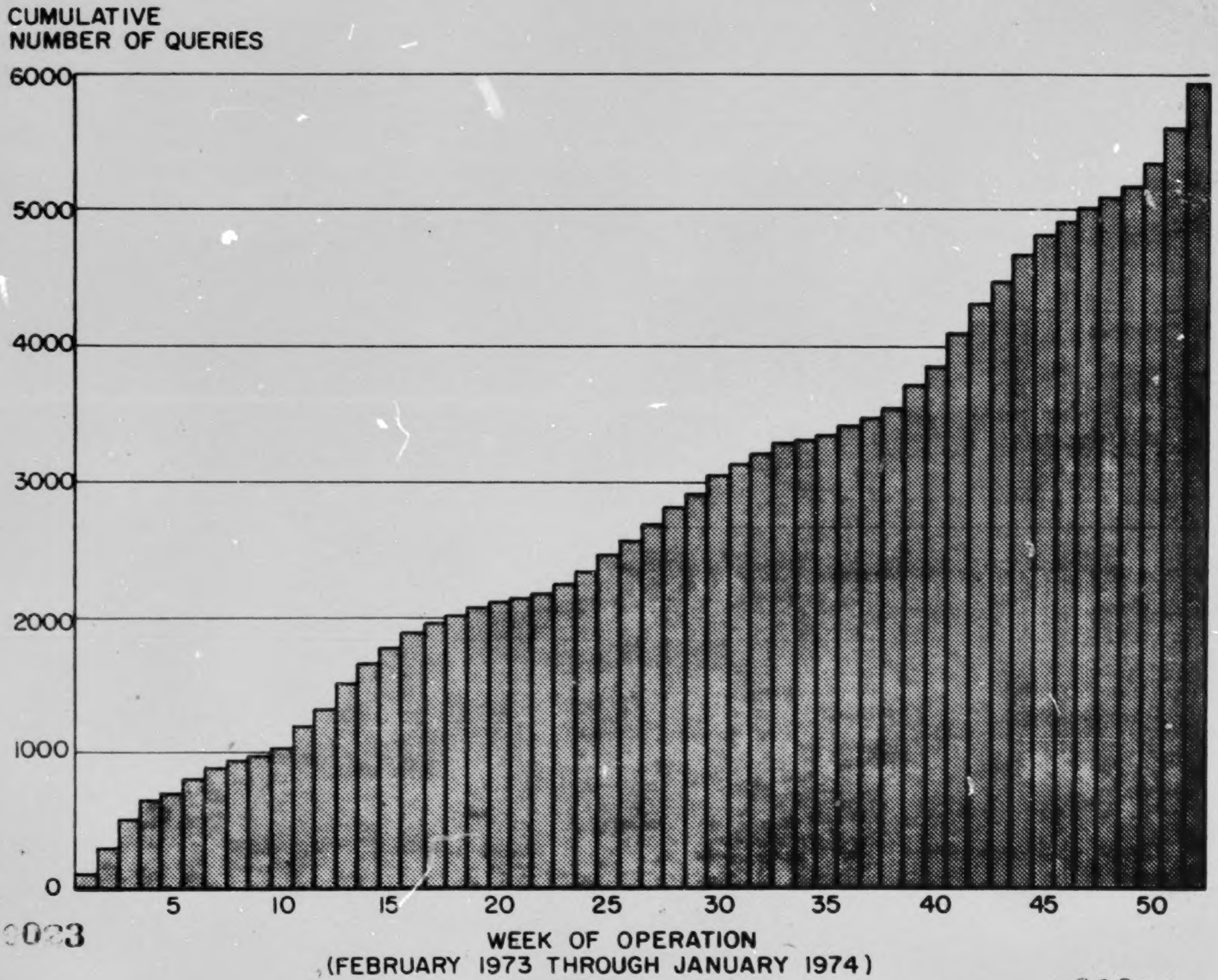

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FIGURE 4. CUMULATIVE RETROSPECTIVE QUERIES

both current awareness and retrospective, for the project year. (See Figure 5. Each retrospective query is a one-shot service and is counted as one search, and each time a current awareness profile is run against a unique set of data, it is also counted as one search. For example, an agriculture current awareness profile is run 12 times a year, each time against a different set of bibliographic data, and is counted as 12 searches.)

The details of the services, the software that made the services possible, the day-to-day operations that produced the services, the marketing that was necessary to let people know about MIC and what MIC was trying to do, and the research activities that laid the groundwork for the services are described in the following sections.

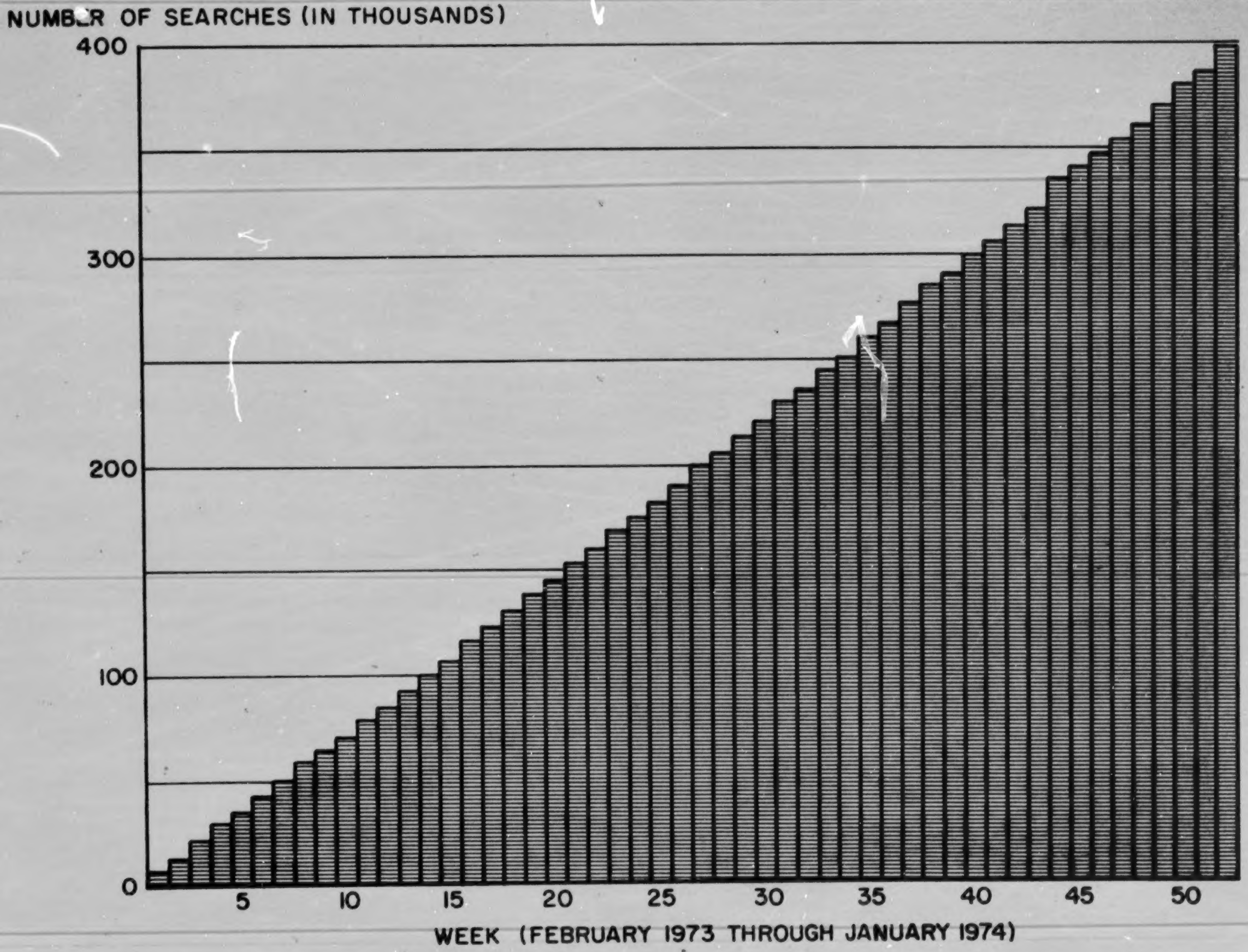

FIGURE 5. CUMULATIVE NUMBER OF SEARCHES

SECTION 2

DATA BASES

To provide effective information services, MIC selected machine-readable bibliographic data bases that would satisfy many of the information needs of faculty and students at The Ohio State University.

In the first year, the emphasis was on serving an academic community with diverse interests, by means of a multidisciplinary data bank. (OSU is a large, urban university. Its Columbus campus has more than 47,000 students, the largest enrollment of any single campus in the nation. More than 7,000 courses are offered in 250 programs of study in such fields as the sciences, engineering, medicine, law, agriculture, home economics, business, dentistry, optometry, and education.)

In the second year, the emphasis shifted to acquiring available data bases in disciplines such as education, and in building retrospective data bases.

In this third project year, the emphasis was on expanding existing data bases and on acquiring new ones in the social sciences, agriculture, and psychology.

2.1 MULTIDISCIPLINARY DATA BANK

A unique aspect of MIC's operation is its use of an integrated, discipline-crossing data base. Because research and teaching overlap each other and move into many areas of knowledge, it is necessary that researchers and teachers keep abreast of developments in their own field and in related fields as well. Further, students' interests also overlap into many subjects.

Therefore, MIC constructed a multidisciplinary data base to satisfy the needs of a wide spectrum of researchers, teachers, staff and students at The Ohio State University. The retrospective file, which contains almost two million citations, and the current awareness file, which contains approximately 8,600 new citations a week, include references to:

(1) journal literature
(2) government reports
(3) books
(4) conference papers

The coverage by the data bank is heaviest in engineering, physics, technology, and biological sciences.

The data bank is composed of five individual data bases that share a common format (either initially or after reformatting) and are physically integrated into one file.

2.1.1 CURRENT AWARENESS

Bibliographic citations from five sources are merged into one file and a new set of citations are searched each week. The total for the year was 448,498 citations. (See Table I.)

2.1.1.1 Pandex Journals

The main source for bibliographic citations of journal and magazine articles is the Pandex Current Index to Scientific and Technical Literature. The index is available on magnetic

TABLE I. CITATIONS IN THE MULTIDISCIPLINARY CURRENT AWARENESS DATA BANK

SOURCE	THROUGH JANUARY 31, 1972	TOTALS FEBRUARY 1, 1972 THROUGH JANUARY 31, 1973	FEBRUARY 1, 1973 THROUGH JANUARY 31, 1974	GRAND TOTAL
JOURNALS	70,748	321,104	265,573	657,425
GOVERNMENT REPORTS	6,747	50,755	55,202	112,704
CONFERENCE PAPERS	13,146	29,156	47,710	90,012
MONOGRAPHS		50,437	80,013	130,450
TOTALS	*90,641*	*451,452*	*448,498*	*990,591*

tape from Macmillan Information, a division of Macmillan Publishing Company, Inc., New York City.

In general, the journals and magazines indexed by the Pandex service are in science, technology, and medicine. The Pandex tape contains bibliographic information on articles appearing in more than 2400 journals. The bibliographic information includes the title of the article, name of the author, full name and coden abbreviation of the journal, volume number, issue number, page number, and subject headings. These subject headings are taken from a Pandex thesaurus and added to the items on the tape. A Pandex program checks each work in a title against a thesaurus and then appends a thesaurus term, if there is one.

During this project year, 214,151 articles and technical notes were indexed by the tape service and searched by the MIC system. (See Table II.)

2.1.1.2 ISI Journals

As a supplement to the Pandex journal coverage, the MIC Data Bank also includes citations from another set of bibliographic citations of journal articles. This supplementary coverage is obtained from ISI Source Tapes, which are available from the Institute for Scientific Information (ISI), Philadelphia, Pennsylvania.

At MIC, the ISI Source tapes are run against a conversion program to delete those journals that are already on the Pandex tapes and to change the format of the items that remain to correspond to the format of the Pandex tapes. Of the approximately 2300 journals in the ISI data bank, approximately 900 were not

TABLE II. PANDEX CITATIONS

TIME PERIOD	*CITATIONS*	
	NUMBER FOR PERIOD	*CUMULATIVE*
FEBRUARY 1, 1973 - APRIL 30, 1973	63,270	63,270
MAY 1, 1973 - JULY 31,1973	51,603	114,873
AUGUST 1, 1973 - OCTOBER 31, 1973	45,670	160,543
NOVEMBER 1, 1973 - JANUARY 31,1974	53,608	214,151

NOTES:

During the first project year (February 1, 1971 through January 31, 1972), the total number of citations was 45,354.

During the second project year (February 1, 1972 through January 31, 1973), the total number of citations was 224, 151.

The cumulative total for the three years is 483,656.

duplicated by the Pandex tapes.

In addition, the original ISI tapes contain such peripheral items as reviews, editorials, letters. The MIC conversion program deletes these.

The information for each article or note includes: title of the article, author(s), abbreviation of the journal name, volume number, issue number, and page number. The journal abbreviations are special 11-character sets of letters devised by ISI; they are not Coden. In addition, there are no subject headings.

The Source index tapes include items from foreign journals. These titles are translated into English and preceded by a two-character code to indicate the language of the article, if it is not English.

Tapes are received and searched weekly. After conversion into the Pandex format, the tapes produced 51,422 unduplicated citations during the project year. (See Table III.)

2.1.1.3 Government Reports

In addition to citations of journal articles, the MIC Data Bank includes bibliographic citations of unclassified government reports that are indexed by the National Technical Information Service (NTIS) of the U.S. Department of Commerce.

NTIS is the central governmental agency for storing and disseminating information on reports resulting from government-sponsored research. The reports, which are compiled in a publication called Government Reports Announcements, are also on tape

TABLE III. ISI CITATIONS (UNDUPLICATED BY PANDEX)

TIME PERIOD	*CITATIONS*	
	NUMBER FOR PERIOD	*CUMULATIVE*
FEBRUARY 1, 1973 - APRIL 30, 1973	14,736	14,736
MAY 1, 1973 - JULY 31, 1973	14,681	29,417
AUGUST 1, 1973 - OCTOBER 31, 1973	10,698	40,115
NOVEMBER 1, 1973 - JANUARY 31, 1974	11,307	51,422

NOTES:

During the first project year (February 1, 1971 through January 31, 1972), the total number of citations was 25,304.

During the second project year (February 1, 1972 through January 31, 1973), the total number of citations was 91,653.

The cumulative total for the three years is 168,379.

from the U.S. Department of Commerce. However, MIC receives the tapes through Macmillan Information, which reformats the original tapes into standard Pandex format.

The reports cover 22 fields, mainly science, engineering, and mathematics, but also include behavioral and social sciences.

The tapes contain standard bibliographic information such as author and title, as well as abstracts, descriptor terms, and prices for paper and microfiche copies. The abstracts are dropped during the processing. Tapes are received twice a month.

During the project year, more than 55,000 citations were searched by the MIC system. (See Table IV.)

2.1.1.4 *Book Titles*

A third source of information is the MARC (Machine-Readable Catalog) data file, which contains bibliographic material on the books cataloged by the Library of Congress. The fields covered are the hard sciences, social sciences, and technology.

MIC obtained these tapes through the Ohio College Library Center (OCLC), which is a cooperative undertaking of primarily academic libraries in Ohio, including The Ohio State University Libraries, and libraries in other states. OCLC is a non-profit corporation and is located on the OSU campus.

The MARC tapes have proven to be a valuable source of information for all patrons. The subject matter covered includes philosophy, history, political science, as well as science, medicine, and technology.

TABLE IV. NTIS CITATIONS

TIME PERIOD	*CITATIONS* *NUMBER FOR PERIOD*	*CUMULATIVE*
FEBRUARY 1, 1973 - APRIL 30, 1973	13,848	13,848
MAY 1, 1973 - JULY 31, 1973	11,453	25,301
AUGUST 1, 1973 - OCTOBER 31,1973	6,929	32,230
NOVEMBER 1, 1973 - JANUARY 31, 1974	22,972	55,202

NOTES:

During the first project year (February 1, 1971 through January 31, 1972), the total number of citations was 6,747.

During the second project year (February 1, 1972 through January 31, 1973), the total number of citations was 50,215.

The cumulative total for the three years in 112,164.

During the project year, more than 80,000 MARC citations were searched by the MIC service. (See Table V.)

2.1.1.5 *Conference Papers*

In July 1974, MIC again added conference papers to its data base. The new source for this information is the World Meetings Information Center, Inc., Chestnut Hill, Massachusetts, which publishes the bibliographic citations of conference papers in the publication called Current Programs. The machine-readable version is obtained through Macmillan Information.

Current Programs contains bibliographic citations of papers delivered at professional conferences and meetings held throughout the world. Among the scientific and technical fields covered are life sciences, chemistry, physical sciences, geosciences, and engineering.

The tapes are received and searched monthly. In the seven-month period that the tape service has been available, more than 47,000 citations were added to the data base. (See Table VI.)

2.1.2 *RETROSPECTIVE FILE*

The number of bibliographic citations in the multidisciplinary retrospective data base reached 1.92 million by the end of January 1974. This is an increase of 570,000 items since the beginning of the project year.

The additions came from the multidisciplinary current awareness data bank. These citations are stored week by week and added in six-month increments to the retrospective data base. During

TABLE V. MARC CITATIONS

TIME PERIOD	*CITATIONS*	
	NUMBER FOR PERIOD	*CUMULATIVE*
FEBRUARY 1, 1973 - APRIL 30, 1973	18,817	18,817
MAY 1, 1973 - JULY 31, 1973	24,971	43,788
AUGUST 1, 1973 - OCTOBER 31, 1973	16,652	60,440
NOVEMBER 1, 1973 - JANUARY 31, 1974	19,573	80,013

NOTE:

During the second project year (February 1, 1972 through January 31, 1973), the total number of citations was 50,437.

TABLE VI. CONFERENCE PAPERS CITATIONS

TIME PERIOD	*CITATIONS* *NUMBER FOR PERIOD*	 *CUMULATIVE*
MAY 1, 1973 - JULY 31, 1973	7,310	7,310
AUGUST 1, 1973 - OCTOBER 31, 1973	16,818	24,128
NOVEMBER 1, 1973 - JANUARY 31, 1974	23,582	47,710

NOTES:

During the first project year (February 1, 1971 through January 31, 1972), the total number of citations was 13,146.

During the second project year (February 1, 1972 through January 31, 1973), the total number of citations was 29,156.

The cumulative total for the three years is 90,012.

the project year, three sets of data were added:

(1) July-December 1972: 180,000 items
(2) January-June 1973: 230,000 itmes
(3) July-December 1973: 160,000 items (does not include conference papers).

The materials in the data base include:

(1) articles and technical notes from past issues of 3,400 journals, 1968-1973
(2) unclassified government reports available from the National Technical Information Service
(3) books cataloged by the Library of Congress, 1971-1973
(4) papers presented at technical conferences in 1971-1972.

2.1.3 LIBRARY LOCATION TABLE

Another set of data in machine-readable form is a file of information on the 4,700 journal titles from the ISI and Pandex data bases that are being searched for the current awareness service. The data are in the form of a matrix that includes: (1) the Pandex abbreviation, (2) ISI abbreviation, (3) full journal title, and (4) location of the libraries on campus that have the journal.

This file, the Journal Library Location Maintenance File (LIBLOC), was constructed so that MIC could print the location of the cited journal on the stub of the current awareness notification cards. This facilitates the first page service and also aids many patrons in going directly to a department library to locate an article. (See Table VII for a compilation of the 29 most widely used libraries.)

MIC also has to make sure that the cross references between the two tape sources are correct so that the patrons do not get

TABLE VII. LIBRARY LOCATIONS AND CODES

Library Location Code	Name of Library	Location of Library on campus
AGE	Agricultural Engineering	Ives Hall
AGI	Agriculture	Agricultural Administration Building
AGO	Agronomy Department	Townshend Hall
BOS	Biological Sciences	Botany Zoology Building
BSL	Black Studies	Main Library
CHE	Chemistry	McPherson Laboratory
CHI	Children's Hospital	not on campus
COM	Commerce	Page Hall
EDU	Education	Arps Hall
ENG	English Graduate	Main Library
ENR	Engineering	Caldwell Laboratory
FIN	Fine Arts Library	Main Library
FOR	Foreign Languages Graduate	Main Library
GEO	Geology Library	Orton Hall
HEA	Health Sciences	Health Sciences Library Building
HIS	History Graduate	Main Library
HOM	Home Economics	Campbell Hall
JOU	Journalism	Journalism Building
MAI	Main Library Circulation	Main Library
MAT	Mathematics	Mathematics Building
MER	Mershon Collection	Main Library Bookstacks
MUS	Music	Highes Hall
PHY	Physics	Smith Laboratory
REF	Reference Department	Main Library
SOC	Social Work	Stillman Hall
TOP	Topaz (Optometry)	Optometry Building
UND	Undergraduate	Main Library
VET	Veterinary Medicine	Sisson Hall
WCL	West Campus	West Campus Library Building

two notifications--one from the Pandex tape and one from the ISI tape--for the same item. Both Pandex and ISI have indexed approximately 2300 journals. Of that total, 1,415 are common to both tape services.

MIC continues to verify the titles and check all the locations for the 3200 journals (after duplications are eliminated) in the multidisciplinary current awareness data base. Although the number of journals in the data bases remained fairly constant, there were close to 100 changes a month in the file because:

(1) the two suppliers of the journal tapes (Macmillan and ISI) change their journal coverages

(2) the OSU Libraries subscribe to new journals that may also be indexed by the tape suppliers (not all journals in the MIC data base are in the OSU collection), cancel subscriptions to journals that are in the data base, or decide to place a journal in the serials collection of a different department library

(3) the publisher of a journal may change the name of the journal, stop publishing it, or merge it into another journal.

Each change affects the file. For example, on December 20, 1973, MIC was notified by a tape supplier that the SPE Journal, which was being indexed by the supplier, was now called Plastic Engineering. MIC checked Central Serial Record Division of The OSU Libraries, and found a listing for Plastics Engineering (not Plastic Engineering), but the listing referred patrons to the SPE Journal. Two weeks later, MIC received a notice from the tape supplier that it was dropping Plastics Engineering from its data base. The title was not exactly the same on the two notifications (Plastic versus Plastics), but the abbreviation was.

However, the tape supplier still included the SPE Journal in its cumulative listing of journals for 1974. MIC then called the publisher, the Society of Plastics Engineers, in Greenwich, Connecticut to verify the name of the journal (yes, it is now called Plastics Engineering and had been called the SPE Journal) and it is still being published. (The other tape supplier does not index the journal.) The Libraries still has a subscription to it and copies can be found in the Chemistry Library. Each change necessitated checking it out and updating LIBLOC entries. Not all changes are as involved as this one, but the file takes continual monitoring. (See Figure 6 a sample of LIBLOC maintenance.)

During the conversion runs of the ISI tapes, LIBLOC is checked to eliminate citations from journals that are also in Pandex. Only unduplicated items remain in the data base.

MIC also has to make sure that all other information is correct so the patron can find the right journal under the right name in the right library.

2.1.4 CONSTRUCTING THE DATA BASE

Construction of the MIC multidisciplinary data bank is in two stages: current awareness and retrospective. (See Figure 7.)

Pandex, NTIS, and conference papers tapes are received from Macmillan in Pandex format, which is the record format adopted in the search system. The ISI Source Index journal tape is received from ISI in ISI tape format, and the MARC II tape is

44

```
DELETION    TEACH COL R                 TEACHERS COLLEGE RECORD                                        EDL, NCL        SS0915
DELETION    ACT MED PR                  ACTA MEDICA PERUANA                                            NCC             NOC1304
ADDITION    J AM OPT A                  JOURNAL OF THE AMERICAN OPTOMETRIC ASSOCIATION                 NCC             NCC1493
ADDITION    BIOCM       BIOINORG CH     BIOINORGANIC CHEMISTRY                                         CHE             UNCAT0089
ADDITION    BIOINORG CH BIOCM           BIOINORGANIC CHEMISTRY                                         CHE             UNCAT0089
ADDITION    ANN HUM BIO                 ANNALS OF HUMAN BIOLOGY                                        NCC             NCC1492
ADDITION    CELL                        CELL                                                           NCC             NOC1491
ADDITION    PROCESS ENG                 PROCESS ENGINEERING                                            ENR             TP1P7
CORRECTION  NATWA       NATURWISSEN     NATURWISSENSCHAFTEN 1                                          PHA, PHY, CHE   Q3N28
CORRECTION  NATURWISSEN NATWA           NATURWISSENSCHAFTEN 1                                          PHA, PHY, CHE   Q3N28
ADDITION    J ANAL PSYC                 JOURNAL OF ANALYTICAL PSYCHOLOGY                               NCC             NCC1490
ADDITION    PRENS MED A                 PRENSA MEDICA ARGENTINA                                        HEA             R21P7
ADDITION    PAEDIATRICI                 PAEDIATRICIAN - INTERNATIONAL JOURNAL FOR THE PEDIATRICIAN     CHI             UNCAT0201
                                          IN PRACTICE
ADDITION    HAREFUAH                    REFUAH - A MEDICAL JOURNAL                                     NCC             NCC1489
CORRECTION  NATUA       NATURE          NATURE 1                                                       PHA, VET, HEA   Q1N28
CORRECTION  NATURE      NATUA           NATURE 1                                                       PHA, VET, HEA   Q1N28
ADDITION    TEICA                       ENGINEERING INSTITUTE OF CANADA. TRANSACTIONS.                 NCC             NOC1488
CORRECTION  JTBIA       J THEOR BIO     JOURNAL OF THEORETICAL BIOLOGY 1                               BCS, AGI        QH301J86
CORRECTION  J THEOR BIO JTBIA           JOURNAL OF THEORETICAL BIOLOGY 1                               BCS, AGI        QH301J86
CORRECTION  ANHGA       ANN HUM GEN     ANNALS OF HUMAN GENETICS                                       BCS             HQ750A1A6
CORRECTION  ANN HUM GEN ANHGA           ANNALS OF HUMAN GENETICS                                       BCS             HQ750A1A6
ADDITION    SCHW R MED                  SCHWEIZERISCHE RUNDSCHAU FUR MEDIZIN PRAXIS                    NCC             NCC1483
CORRECTION  ACT POLY CI                 ACTA POLYTECHNICA SCANDINAVICA. CIVIL ENGINEERING AND          ENR             TH1A2
                                          BUILDING CONSTRUCTION SERIES
CORRECTION  AMPNB       ACT MIC P B     ACTA MICROBIOLOGICA POLONICA. SERIES B. MICROBIOLOGICA         PCS             QR1A183
                                          APPLICATA
CORRECTION  ACT MIC P B AMPNB           ACTA MICROBIOLOGICA POLONICA. SERIES B. MICROBIOLOGICA         PCS             QR1A183
                                          APPLICATA
CORRECTION  AMPCB       ACT MIC P A     ACTA MICROBIOLOGICA POLONICA. SERIES A. MICROBIOLOGICA         PCS             QR1A182
                                          GENERALIS
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FIGURE 6. SAMPLE OF LIBLOC MAINTENANCE

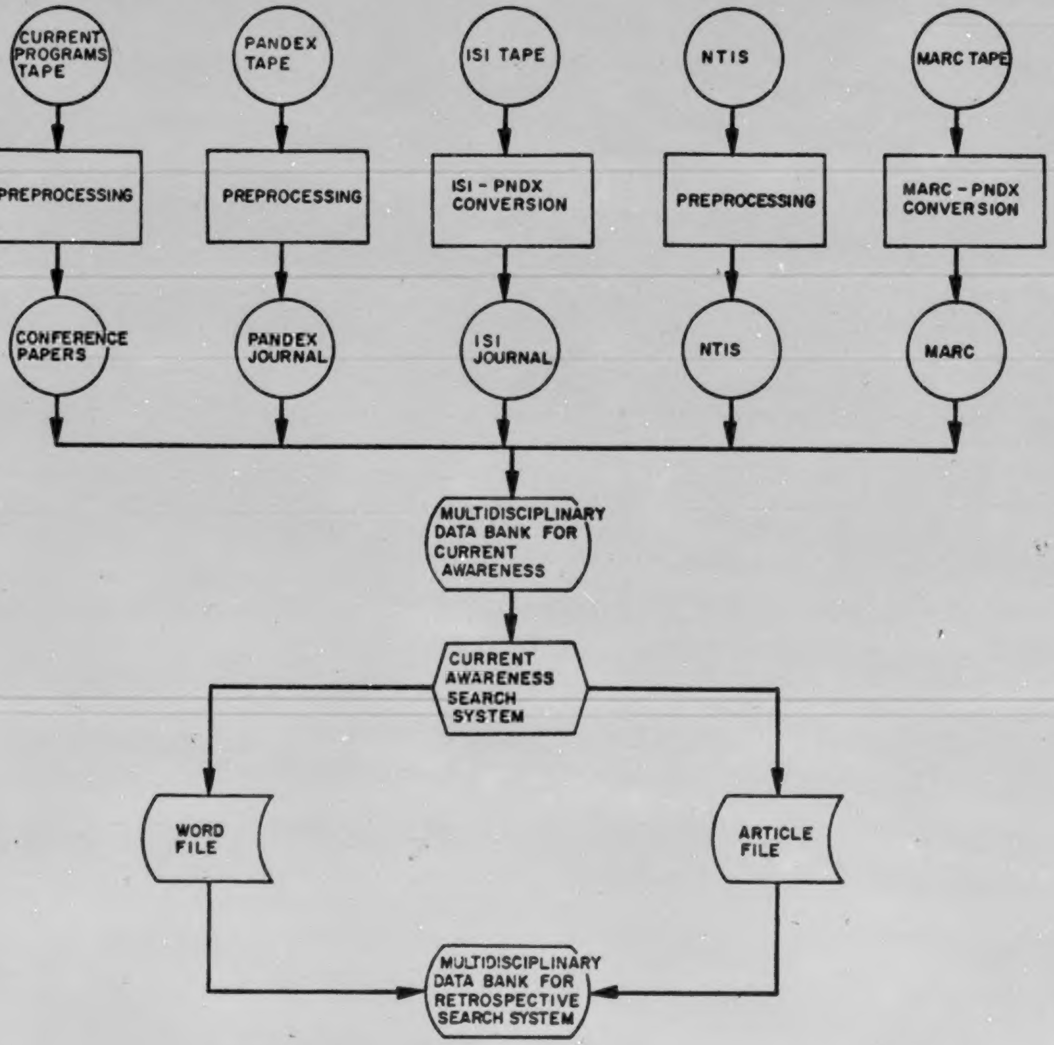


FIGURE 7. CONSTRUCTION OF THE MULTIDISCIPLINARY DATA BANK

received from Ohio College Library Center in MARC II tape format. Both of them are converted into Pandex format.

These five tape sources are then logically merged into the current awareness multidisciplinary data base, which is required weekly.

Once the multidisciplinary data base is searched in the Current Awareness System, the data base, which was put on disk, is retained for Retrospective Search System. The searchable data base is composed of two disk resident data sets: a word record file and an article file. These two data sets are linked by a unique document number generated by the search system. Thus, the word record file and the article file constitute the multidisciplinary data base for the retrospective search system.

2.2 DISCIPLINARY DATA BASES

MIC also offers information services based on these disciplinary oriented data bases:

(1) Social Sciences
(2) Chemical Titles
(3) Bibliography of Agriculture
(4) Research in Education (RIE) and Current Index to Journals in Education (CIJE), both are Educational Resources Information Center (ERIC) tapes.
(5) Psychological Abstracts.

The first three data bases are for current awareness services, the fourth data base is for a current awareness service and a retrospective service, and the last one is for a retrospective service only.

2.2.1 *SOCIAL SCIENCES*

The first new data base added by MIC in the project year was in the social sciences. The data base includes references to journal articles and to books. The article citations are from a tape service of ISI and the book titles are from The Library of Congress.

MIC has been building and searching this data base since April 1973. The cumulative number of citations searched by the end of January 1974 was 84,196. (See Table VIII.)

Specific fields covered by the data base include Anthropology, Archaeology, Business and Finance, Clinical Psychology, Communication, Computer Application and Cybernetics, Criminology, Demography, Economics, Environment, Ethnic Studies, Geography, Health and Rehabilitation, History, Human Development, Humanities, Industrial Psychology, Information and Library Science, International Relations, Law, Linguistics, Management Science, Operation Research, Philosophy, Political Science, Psychiatry, Psychology, Public Administration, Public Health, Social Issues, Social Work, Sociology, Technology, Transportation, and Urban Studies.

To cover these fields, the data base includes references to all articles and technical notes from the current issues of 962 journals specifically in social sciences (see Appendix A) and selected articles from 1,000 other journals, in addition to books cataloged by the Library of Congress.

Approximately 4,000 items are searched every two weeks from these sources.

TABLE VIII. CITATIONS IN THE SOCIAL SCIENCES CURRENT AWARENESS DATA BANK

TIME PERIOD	*CITATIONS* *JOURNAL ARTICLES*	*BOOKS*	*TOTALS*
FEBRUARY 1, 1973 - APRIL 30, 1973	4,161	3,142	7,303
MAY 1, 1973 - JULY 31, 1973	10,023	11,637	21,660
AUGUST 1, 1973 - OCTOBER 31, 1973	8,282	12,628	20,910
NOVEMBER 1, 1973 - JANUARY 31, 1974	12,016	22,297	34,323
GRAND TOTALS	*34,492*	*49,704*	*84,196*

51

2.2.2 EDUCATION

Data bases for both a current awareness and a retrospective search service in education were expanded during the project year. These files are generated by ERIC (Educational Resources Information Center), a part of the U.S. Department of Health, Education, and Welfare, and are obtained through Macmillan Information.

For both services, RIE (Research in Education) and CIJE (Current Index to Journals in Education) citations are searched. RIE citations are references to recently completed research and research-related reports in the fields of education, educational psychology and child development. Books and government reports are included. CIJE contains citations of articles from approximately 530 journals that are also pertinent to education, educational psychology and child development.

2.2.2.1 Current Awareness

The current awareness data bank includes both the current RIE and CIJE tapes, which are received monthly. Approximately 2,750 items were searched each month for the current awareness service. (See Table IX.) MIC receives the ERIC tapes through Macmillan Information in the ERIC format. They are not converted to the Pandex format.

These citations are stored and subsequently added to the retrospective data base in six-month increments.

TABLE IX. CITATIONS IN THE EDUCATION CURRENT AWARENESS DATA BANK

	CITATIONS		
TIME PERIOD	*RIE*	*CIJE*	*TOTAL*
FEBRUARY 1, 1973 - APRIL 30, 1973	2,999	4,485	7,484
MAY 1, 1973 - JULY 31, 1973	4,593	6,554	11,147
AUGUST 1, 1973	2,357	4,829	7,186
NOVEMBER 1, 1973 - JANUARY 31, 1974	3,875	3,313	7,188
GRAND TOTALS	13,824	19,181	33,005

During the last project year (February 1, 1972 through January 31, 1973), the total number of citations was 12,885.

2.2.2.2 *Retrospective*

The retrospective data base increased by 160% during the project year. The total number of citations reached 134,268 by January 1974, and included:

(1) RIE - November 1966 through June 1973
(2) CIJE - January 1969 through June 1973.

In the previous project year, the data base only included RIE citations through June 1972. All the CIJE citations and an additional year of RIE citations were added during the third project year.

Additional citations from the current awareness service will be added to the file in the coming year.

2.2.3 *CHEMISTRY*

The data base for chemistry current awareness includes citations of articles from approximately 730 journals in the fields of chemistry and chemical engineering. The citations are obtained from Chemical Titles (CT), an "express tape service" of Chemical Abstracts Service, a Division of the American Chemical Society. The CT tapes give the titles of papers published in journals before an abstract of the article appears in Chemical Abstracts, which is also produced by the American Chemical Society.

The information of each CT paper includes titles, author, and complete bibliographic reference. The tapes are issued bi-weekly and furnished approximately 132,000 citations during the project year. (See Table X.)

TABLE X. CITATIONS IN THE CHEMISTRY CURRENT AWARENESS DATA BASE

TIME PERIOD		*CITATIONS*
FEBRUARY 1, 1973 - APRIL 30, 1973		33,745
MAY 1, 1973 - JULY 31, 1973		30,226
AUGUST 1, 1973 - OCTOBER 31, 1973		38,745
NOVEMBER 1, 1973 - JANUARY 31, 1974		29,308
	TOTAL	*132,024*

The cumulative total for the three years is approximately 390,000 citations.

MIC receives these tapes directly from Chemical Abstracts Service which has its offices next to the OSU campus. MIC has been subscribing to the tapes since 1971.

2.2.4 AGRICULTURE

The second discipline-oriented data base added during the project year was in agriculture. The source is the Bibliography of Agriculture, which covers articles from journals and reports published by the U.S. Department of Agriculture and the State Agricultural stations and services, in the fields of agriculture and allied sciences. The material is also of interest to scientists in entomology, botany, and plant pathology.

Specific fields covered include: Agricultural Economics, Agricultural Administration and Management, Land Economics, Legislation, Consumer Protection, Human Nutrition, Home Economics, Dairy Products, Livestock Products, Poultry Products, Crops, Horticulture, Animal Husbandry, Infectious and Parasitic Diseases, Forestry Management, Silviculture, Plant Taxonomy, Plant Ecology, Plant Morphology, Plant Genetics, Plant Physiology, Herbicides, Insect Pests and Controls, Soil Science, Water Resources and Management.

Titles and authors of articles and reports received by the National Agricultural Library and indexed for the Bibliography of Agriculture are included. Approximately 9,700 citations are on each tape. The tapes are obtained from National Agricultural Library, U.S. Department of Agriculture, through Macmillan Information, Inc. (See Table XI.)

TABLE XI. CITATIONS IN AGRICULTURE CURRENT AWARENESS DATA BASE

TIME PERIOD	*CITATIONS*	*NUMBER OF TAPES*
FEBRUARY 1, 1973 - APRIL 30, 1973	10,366	1
MAY 1, 1973 - JULY 31, 1973	19,985	2
AUGUST 1, 1973 - OCTOBER 31, 1973	31,783	3
NOVEMBER 1, 1973 - JANUARY 31, 1974	45,307	5
TOTAL	*107,411*	

2.2.5 *PSYCHOLOGY*

The third, and newest, data base acquired by MIC was a seven-year retrospective file of Psychological Abstracts. This base, which was obtained from the American Psychological Association, Washington, D.C., contains 139,629 citations for the years 1967 through 1973.

Specific fields covered by the file include: General Psychology, Psychometrics and Statistics, Perceptual and Motor Performance, Cognitive Processes and Motivation, Neurology and Physiology, Psychopharmacology and Physiological Intervention, Infrahuman Psychology, Cultural Influences and Social Issues, Social Behavior and Interpersonal Processes, Communication and Language, Personality, Professional Personnel, Physical and Psychological Disorders, Treatment and Prevention, Educational Psychology, Applied Psychology.

The items in the base include books, book chapters, journal articles, technical reports, conference proceedings, motion pictures, audio tapes, and dissertations.

The file is reformatted to the standard MIC format. Information retained includes:

(1) titles
(2) author
(3) journal name or book imprint or book title or Dissertation Abstracts International citation number or conference name
(4) year, volume, issue number, pages for journal articles; place, publisher, and date for books; author and title of the book for book chapters
(5) Psychological Abstracts reference for the location of the abstract.

The abstracts themselves are not retained.

SECTION 3

INFORMATION SERVICES

The number of people helped by the MIC information services reached 10,000 during the third project year. The help ranged from providing computer-based current awareness and retrospective services to telling people where else they might go in the library for help.

MIC is part of Public Services of the OSU Libraries and, like all Public Services departments, MIC tries to find the right information for the right person. The information can be a reference in the card catalog, a set of MIC notification cards, or the telephone number of the circulation system.

"We see the very same kinds of problems in helping patrons in the use of library resources, with a modern efficient MIC system for bibliographic retrieval, as we have seen historically with traditional library services," said Larry X. Besant, Assistant Director for Public Services of the OSU Libraries. "The MIC impact has been in actively reaching out to patrons."

The MIC impact has been heaviest in the third year of operation. For example, the number of current awareness profiles has been as follows:

by the end of January 1972, there were 328 profiles,
by the end of January 1973, there were 2,086 profiles,
by the end of January 1974, there were 3,288 profiles.

And, the number of retrospective searches has been:

during the first project year, no searches
during the second project year, 1,623 searches
during the third project year, 5,936 searches.

The demand is continuing to build.

The fourth quarter of the third project year was the biggest one in terms of services provided to patrons. For example, MIC did more retrospective searches in the fourth quarter of the third year, than it did during the approximately seven months that such services were available in the previous project year. The fourth quarter was also the best three months for current awareness services. See Figure 8 for a comparison by quarters, of the number of profiles in the five current awareness services (multidisciplinary, chemistry, education, social sciences, agriculture) and Figure 9 for a comparison, by quarters, of the queries handled by the three retrospective services (multidisciplinary, education, psychology).

During the project year, MIC sent out more than three million notifications of journal articles, government reports, and book titles that would probably be of interest to those people using the eight MIC services. For all three years, the total is nearly 4.4 million notifications.

Much of the increase was due to an intensive advertising campaign that was begun in the last half of the project year and will be explained in detail in Section 7.

The details of the services, including the Document Delivery Service, are detailed in this section. (See Appendix B for summary sheets on all eight services.)

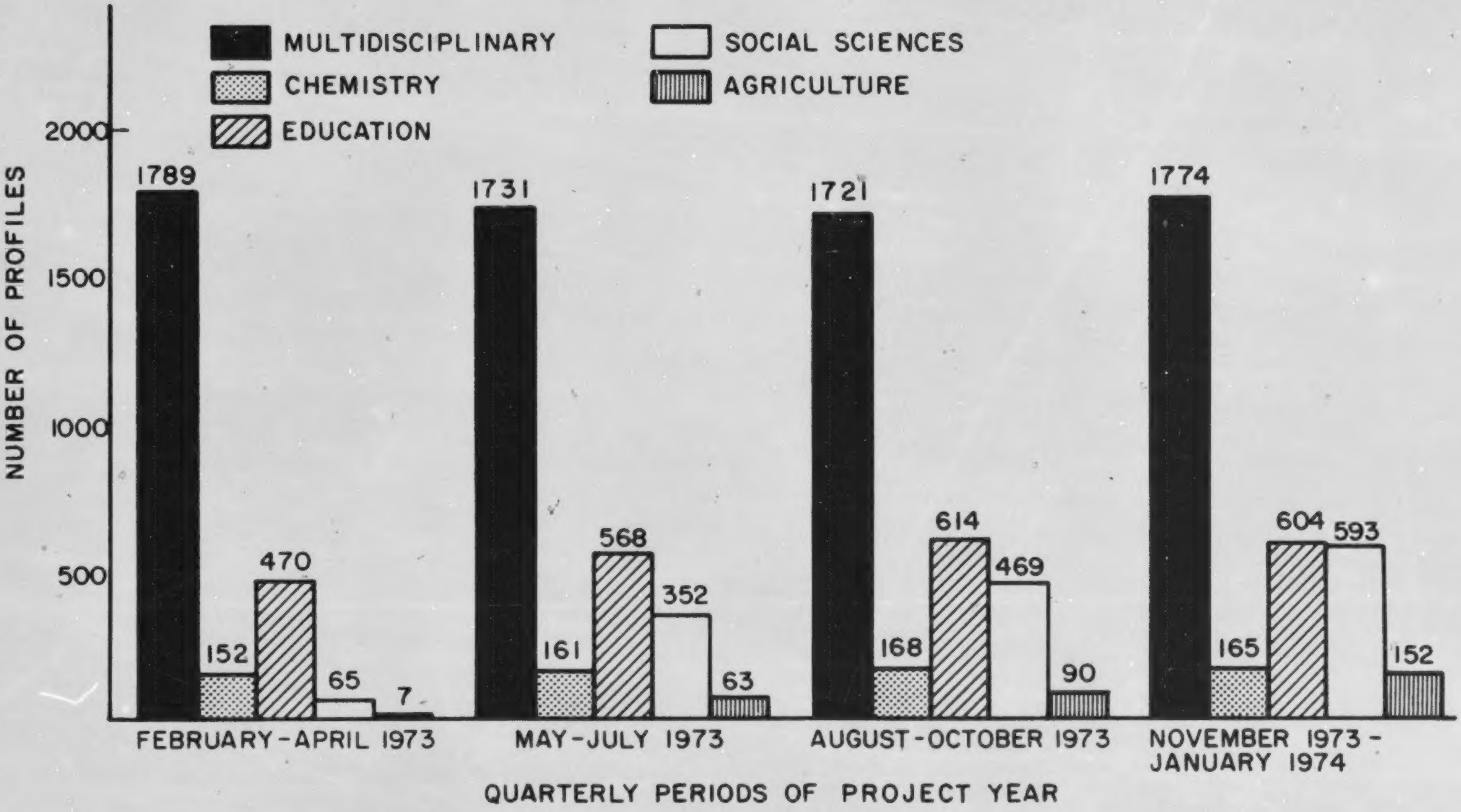


FIGURE 8. PROFILES IN THE MIC CURRENT AWARENESS SERVICES

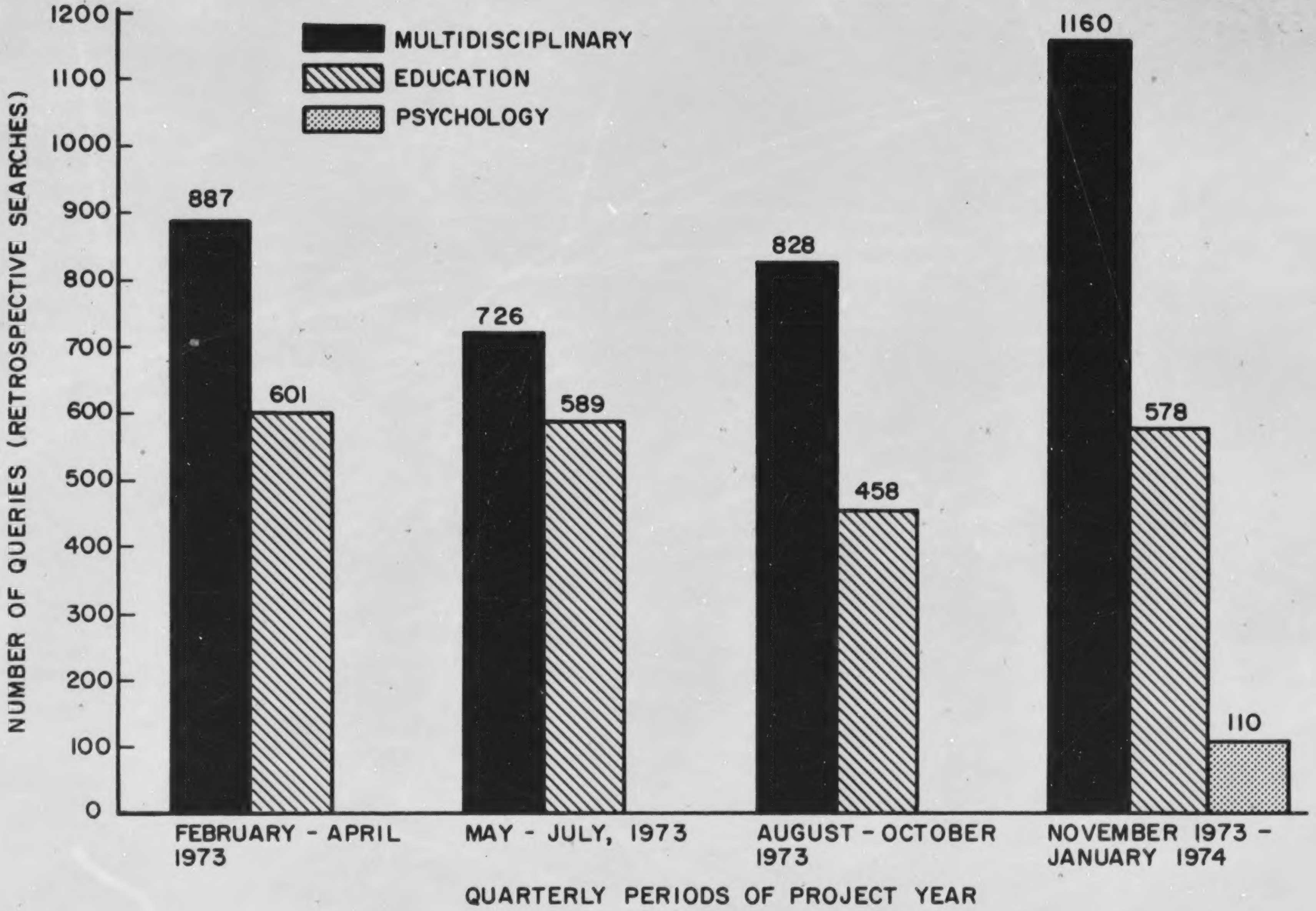


FIGURE 9. NUMBER OF RETROSPECTIVE SEARCHES PERFORMED QUARTERLY

63

64

3.1 CURRENT AWARENESS

During the year, MIC sent out approximately 1.9 million notifications to patrons through five current awareness services. (See Table XII.) As shown by Figure 8, the number of multidisciplinary and chemistry profiles remained fairly constant during the year, education and agriculture had modest steady growths, and social sciences had the most rapid growth.

The differences in demand for the services can partially be explained by the scope of the information covered. The broader the data base, the more people it can serve. When MIC first began offering the services in 1971, the multidisciplinary service was offered to anyone who could not use the Chemistry service. The multidisciplinary base was set up to cover the other fields, especially in the health and physical sciences, and in engineering. It covered other material, and still does. People from other disciplines used the service even when there was only peripheral coverage of their fields. The information they obtained was still useful. There are still more people using the multidisciplinary service than any other.

Social sciences is the next most broadly based service, education perhaps a close second, and chemistry and agriculture are both narrower disciplines. In general, the demand for services is directly proportional to the broadness of the data base and, in some cases, how long a service has been offered.

All five current awareness services operate similarly, when it comes to profiling. A summary of profiling techniques and a

65

TABLE XII. NUMBER OF CURRENT AWARENESS NOTIFICATIONS SENT OUT

Service	PROJECT YEAR 1	2	3	Total
MULTIDISCIPLINARY	37,381	790,757	1,233,551	2,061,689
CHEMISTRY	14,139	83,356	102,041	199,536
EDUCATION	--	13,858	268,812	282,670
SOCIAL SCIENCES	--	--	208,979	208,979
AGRICULTURE	--	--	80,840	80,840
TOTAL	51,520	887,971	1,894,223	2,833,714

description of how the current awareness system works are included only in the multidisciplinary section.

3.1.1 MULTIDISCIPLINARY

The multidisciplinary current awareness was still the most heavily used service in the third project year. Although the overall demand for the service was fairly stable, varying from 1721 to 1789 profiles, there was a steady stream of new people using the service. However, they have been balanced by people leaving the service because of:

(1) graduation of students each quarter
(2) transfer of profiles from the multidisciplinary services to one of the other four current awareness services
(3) faculty members leaving the campus
(4) people no longer needing the service.

In addition, update sheets and copies of the individual profiles were mailed out twice during the project year--once in June and once in December--to all people using the service. These updates allow the information specialists to screen out those people who are no longer interested in the service and to update the profiles of those who are. Very few people drop the service, but many--approximately a third--have some sort of change in their profiles. The responses are a formal feedback mechanism that allows MIC to improve the recall and precision of profiles.

Through the multidisciplinary current awareness system, a person is able to scan a weekly batch of 8,000 or more citations of current articles, reports, books, and conference papers. The system then selects and prints out, one to a card, the bibliographic citations that are pertinent to his or her interests. These average about 15 a week.

The MIC information specialists help the user to identify his or her specific interests and to set those interests down as a series of words. For example, a patron says he wants information on pollution. The conversation might run something like this:

Information Specialist: Are you interested in water or air pollution?

Patron: Water.

Information Specialist: All types of water pollution? from chemicals? from human waste?

Patron: No. I'm interested in chemical pollution by industry.

Information Specialist: What chemicals?

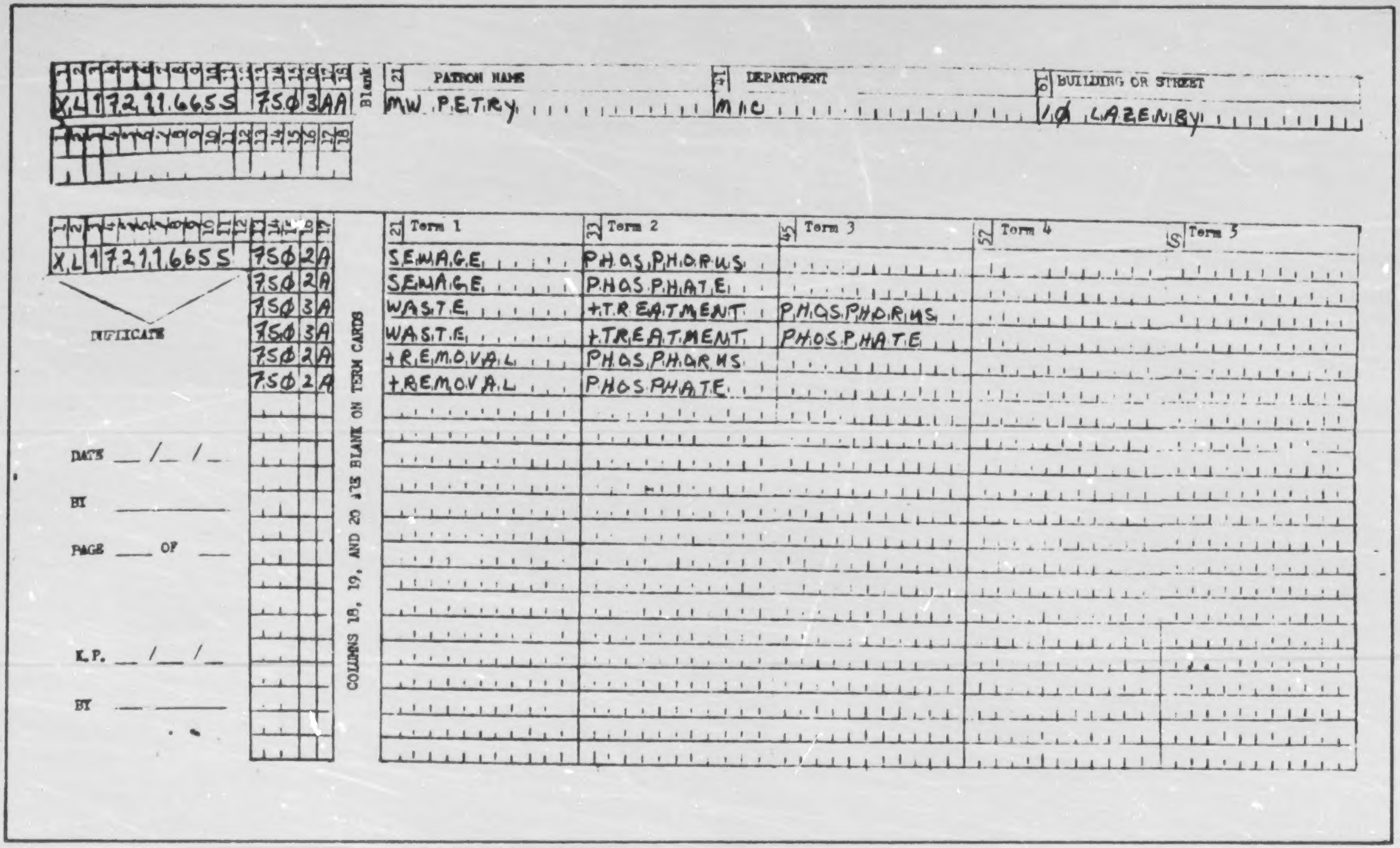
Patron: Mostly phosphorus.

Information Specialist: How to detect it? How to remove it? What?

Patron: Really, how to remove it and how it's treated at sewage plants.

In this manner, the specialist narrows down an interest area and builds an interest profile for the patron. The final one would consist of sets of terms, like those shown in Figure 10.

In general, the process of coding terms and names in a form suitable for keypunching, is handled by the information specialist who initiated the profile.



Blank

PATRON NAME: MW PETRY

DEPARTMENT: MIC

BUILDING OR STREET: 10 LAZENBY

XL172116655 750 3AA

DUPLICATE

DATE __ /__ /__

BY ________

PAGE ___ OF ___

K.P. __ /__ /__

BY __ ______

COLUMNS 18, 19, AND 20 ARE BLANK ON TERM CARDS

		Term 1	Term 2	Term 3	Term 4	Term 5
XL172116655	750 2A	SEWAGE	PHOSPHORUS			
	750 2A	SEWAGE	PHOSPHATE			
	750 3A	WASTE	+TREATMENT	PHOSPHORUS		
	750 3A	WASTE	+TREATMENT	PHOSPHATE		
	750 2A	+REMOVAL	PHOSPHORUS			
	750 2A	+REMOVAL	PHOSPHATE			

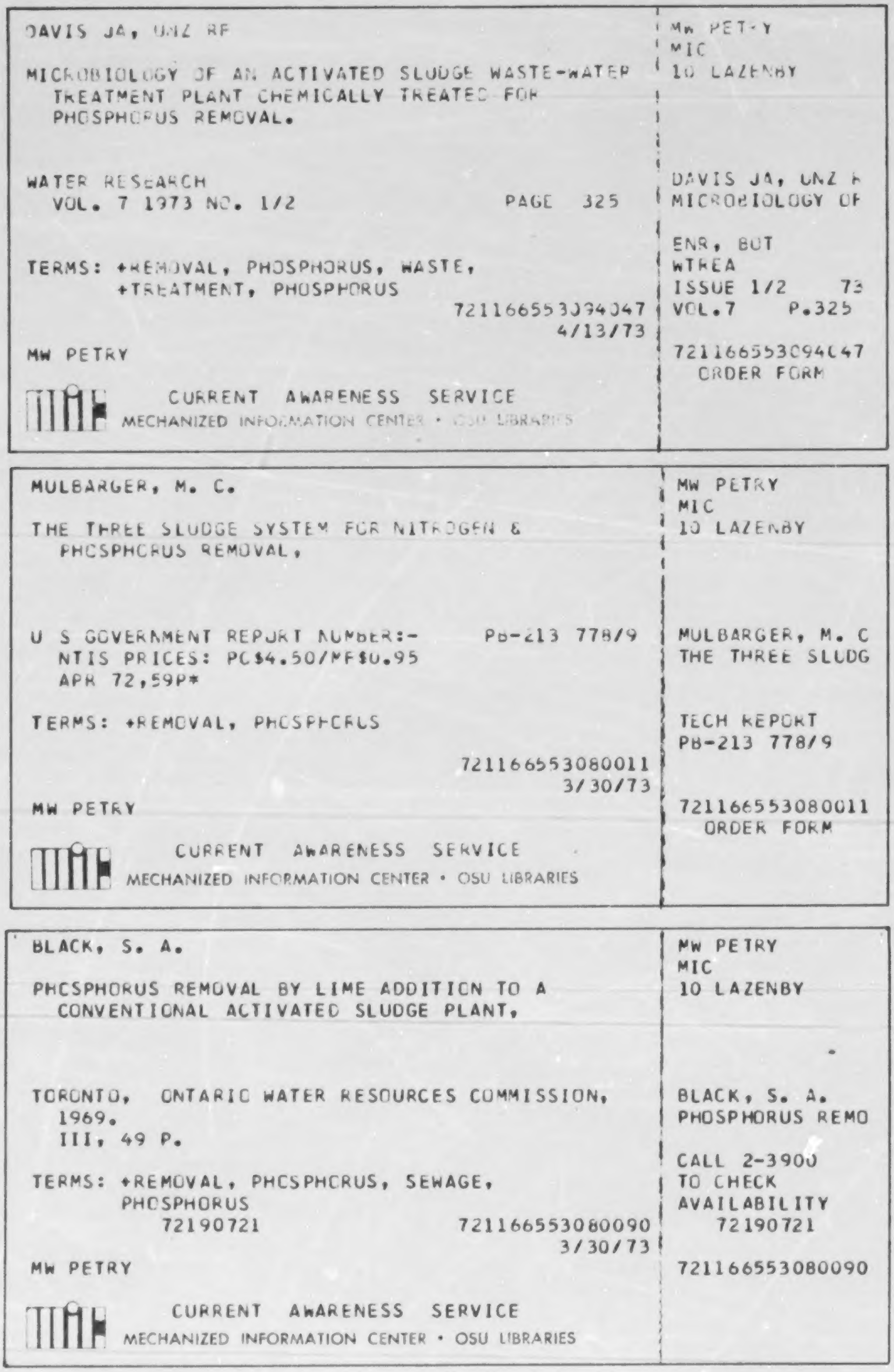
FIGURE 10. SAMPLE PROFILE FOR THE MULTIDISCIPLINARY CURRENT AWARENESS SERVICE

The two types of logic used in profiling and coding are shown in Figure 10. For example, "SEWAGE" and "PHOSPHORUS" must appear in a title in order for a notification to be generated. The same is true for "SEWAGE" and "PHOSPHATE". These are examples of "and" logic. The profile has four other term groups. If a title contains any of the six groups of terms, a notification would be generated. There is "or" logic between the term groups. Variations are possible: single terms instead of term groups, weights lower than the threshold, and negative terms and term groups.

The MIC system matches profile words against key words in the titles of articles, reports, and papers in the Multidisciplinary Data Bank. Each profile word is weighted with a number that is a kind of probability that the article containing the term would interest the patron. (The system also searches authors, subject headings, and descriptor terms, in addition to title words.) When a match occurs and the numerical value of the weights exceeds a certain threshold value, a notification card is generated.

The MIC notification card was developed as a two-part form with a main section and a tear-off stub. (See Figure 11 for samples of the results of a current awareness search performed on the profile shown in Figure 10.)

The stub is intended to hold necessary information for use in the Document Delivery System: the patron's name and address for mailing purposes, journal identification, truncated author and title references, and the OSU library location code for the journal cited.



DAVIS JA, UNZ RF

MICROBIOLOGY OF AN ACTIVATED SLUDGE WASTE-WATER TREATMENT PLANT CHEMICALLY TREATED FOR PHOSPHORUS REMOVAL.

WATER RESEARCH
VOL. 7 1973 NO. 1/2 PAGE 325

TERMS: +REMOVAL, PHOSPHORUS, WASTE,
+TREATMENT, PHOSPHORUS
721166553094047
4/13/73

MW PETRY

CURRENT AWARENESS SERVICE
MECHANIZED INFORMATION CENTER • OSU LIBRARIES

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MIC
10 LAZENBY

DAVIS JA, UNZ R
MICROBIOLOGY OF

ENR, BUT
WTREA
ISSUE 1/2 73
VOL.7 P.325

721166553094047
ORDER FORM

Journal Article

MULBARGER, M. C.

THE THREE SLUDGE SYSTEM FOR NITROGEN & PHOSPHORUS REMOVAL,

U S GOVERNMENT REPORT NUMBER:- PB-213 778/9
NTIS PRICES: PC$4.50/MF$0.95
APR 72,59P*

TERMS: +REMOVAL, PHOSPHORUS

721166553080011
3/30/73

MW PETRY

CURRENT AWARENESS SERVICE
MECHANIZED INFORMATION CENTER • OSU LIBRARIES

MW PETRY
MIC
10 LAZENBY

MULBARGER, M. C
THE THREE SLUDG

TECH REPORT
PB-213 778/9

721166553080011
ORDER FORM

Government Report

BLACK, S. A.

PHOSPHORUS REMOVAL BY LIME ADDITION TO A CONVENTIONAL ACTIVATED SLUDGE PLANT,

TORONTO, ONTARIO WATER RESOURCES COMMISSION,
1969.
III, 49 P.

TERMS: +REMOVAL, PHOSPHORUS, SEWAGE,
PHOSPHORUS
72190721 721166553080090
3/30/73

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MECHANIZED INFORMATION CENTER • OSU LIBRARIES

MW PETRY
MIC
10 LAZENBY

BLACK, S. A.
PHOSPHORUS REMO

CALL 2-3900
TO CHECK
AVAILABILITY
72190721

721166553080090

Book

FIGURE 11. SAMPLE NOTIFICATION CARDS

The main section is then a 3 by 5 inch file card for a personal card catalog of pertinent items, and the stub becomes the order form for the MIC copy service, which is optional.

3.1.2 CHEMISTRY

The Chem Titles current awareness service was offered throughout the year. The data base contains articles from approximately 730 journals. The service is used mainly by faculty to assist them in keeping informed of the current literature in the fields of chemistry and chemical engineering.

Throughout the year, the number of users has remained steady. The year ended with 165 profiles in the Chem Titles service. Each user received an average of 24 to 27 notifications every two weeks.

3.1.3 EDUCATION

The current awareness service in education is a joint venture of MIC and the Education Library. The data tapes are made available to MIC by ERIC (Educational Resources Information Center), through Macmillan Information. In all, 604 people were receiving notifications through the Education Current Awareness Service, by the end of January 1974. This was an increase of 459 from the previous January. Each patron received approximately 30 notifications a month.

Information Specialists at MIC and Reference Librarians at the Education Library have been doing profiling for the services since they were first offered to faculty and students in late October 1972. In addition, the members of the staff at OSU's

Center for Vocational and Technical Education (CVTE) can go directly to the CVTE Librarian for MIC services. MIC has trained the librarians at the Education Library and at CVTE to do profiles and to code them.

MIC assists the librarians with difficulties they have in the preparation of profiles. Most of this consultation occurs by phone. (Two of the current MIC Information Specialists had been Reference Librarians at the Education Library.)

To do a current awareness search in education, Information Specialists select descriptors from the ERIC thesaurus or words from the title of the article or report. They can also search authors. The profiles that are prepared by the Education Library or CVTE are merged with MIC profiles and are run against the ERIC data banks. The MIC notification cards resulting from the search give the author, title, up to four lines of descriptors, education document accession number, and information as to the availability of microfiche for each RIE citation. If no microfiche is available through ERIC because of copyright restrictions, the MIC card citation advises the patron to call the OSU Library's automated circulation system to check on the availability of the document in hard copy. Most of the RIE documents are available on microfiche at the Education Library. The CIJE items can be found in the source journals, most of which are available in the Education Library.

By patron request, notifications are either mailed directly from MIC to patrons with campus addresses or they are sent in a batch mailing to the Education Library where patrons may pick them up. In some cases, searches are picked up in the MIC office.

3.1.4 SOCIAL SCIENCES

Social Sciences Information Service (SSIS) was one of the two new current awareness services offered in April 1973. The demand for it grew steadily--65 profiles in the first quarter, 352 in the second quarter, 469 in the third quarter and 593 in the fourth quarter.

In many cases, people in the social sciences are not used to computer-based information systems and become strong advocates of the idea and the MIC system.

For example, a young associate professor in the History Department scans his cards as soon as he gets them. For each mailing, he ends up checking the OSU circulation system for two to five books selected by the system. He maintains a shelf of new books of interest to him through the current awareness system.

A full professor who has taught Philosophy at OSU for 26 years is building his own personal card catalog of pertinent books and articles in his field. He plans to use the cards as bibliographic source material when he leaves OSU to teach at Brandeis.

MIC expects SSIS to continue to grow in the next project year. It is really a multidisciplinary service in the social sciences and should appeal to a large group of people on campus. Each patron now receives approximately 25 notifications every two weeks.

3.1.5 AGRICULTURE

The Agriculture Current Awareness Service was inaugurated about the same time as the social sciences service. However, in terms of number of people using it, it has grown slowly during the project year: 7 profiles in the first quarter, 63 in the second, 90 in the third, and 152 in the fourth.

The reason that almost four times as many people use the social sciences service than use the agriculture service is that the scope of the social sciences data base is much broader than the scope of the agriculture data base.

Most of the people now using the Agriculture Current Awareness Service are from the College of Agriculture and Home Economics, including the Department of Agronomy and the Ohio Agricultural Research and Development Center (OARDC) in Wooster, Ohio.

The librarian at the OSU Agriculture Library is also trained to help people with this MIC service. He has announced the service at faculty meetings and helped publicize it through his library.

The service will grow in the next project year into other departments of OSU. The data base can help people dealing with water resources and management, plant ecology, and consumer protection, as well as those in more agriculture-oriented fields.

Each patron using the Agriculture Current Awareness Service receives approximately 100 notifications a month.

3.2 RETROSPECTIVE SERVICES

During the project year, MIC sent out almost 1.3 million notifications (see Table XIII) through three retrospective services: multidisciplinary and education, which were begun in the previous project year, and psychology, which was inaugurated in January 1974.

TABLE XIII. NUMBER OF RETROSPECTIVE NOTIFICATIONS SENT OUT

	PROJECT YEAR			
Service	*1*	*2*	*3*	*Totals*
MULTIDISCIPLINARY	--	207,610	747,830	955,440
EDUCATION	--	58,188	523,257	581,445
PSYCHOLOGY	--	-----	9,045	9,045
TOTALS		*265,798*	*1,280,132*	*1,545,930*

As shown in Figure 9, the demand for retrospective searches was the heaviest in the fourth quarter of the year.

3.2.1 *THREE RETROSPECTIVE SERVICES*

In the project year, MIC performed 5,937 retrospective searches for patrons. Three-fifths of the searches were multidisciplinary; almost two-fifths were education. The psychology retrospective service was offered in January 1974, the last month of the project year, and accounted for 2% of the searches for the year.

The growth in acceptance for the retrospective service is indicated by the increased demand, especially from students. The demand varies, depending on the time of the quarter. It peaks around the middle of a quarter, from the fourth to sixth weeks, and then drops. Between quarters, there is a slight demand for services, mainly from faculty and graduate students.

The three services are run weekly, and the output is on notification cards. In the fourth quarter of the project year, the average number of notifications per search was 178 for multidisciplinary, 244 for education, and 82 for psychology.

3.2.2 *SIMILARITIES WITH CURRENT AWARENESS*

Again, the differences in demand for the searches can be explained mainly in terms of broadness of coverage of the data bases. The multidisciplinary data base has a broader coverage than the one in education. There are 1,920,000 citations in the multidisciplinary base, which covers many fields, and 134,000 in the education data base, which covers education and educational psychology. In addition, some of the people who had been using the education retrospective service for information about psychology, can use the psychology search service instead.

In addition, the multidisciplinary retrospective search service serves those patrons who use the multidisciplinary, chemistry, agriculture, and, in some cases, even the social sciences, current awareness services.

The demand, as MIC reaches out to faculty and, especially, to students, is increasing. The cumulative demand for the three retrospective services, and the average number of notifications generated by a search, is shown in Table XIV.

Frequently, a person who starts a current awareness profile, particularly a multidisciplinary one, will have a retrospective search done as well.

3.2.3 DIFFERENCES IN PROFILING

The profiling for retrospective services is done much the same way as for current awareness services, except that the profiles are not as long nor are they as general. For example, a multidisciplinary search that had the term "ion" by itself would generate 25,589 notifications. An education retrospective search with the term "instruction" by itself would yield 21,023 notifications.

A set of frequency lists for the services has been prepared so that information specialists can predict the output from a search in advance. Techniques that involve combining high frequency terms with low frequency terms are used to cut down the

TABLE XIV. RETROSPECTIVE SEARCHING IN THIRD PROJECT YEAR

Service	*Number of Searches Performed*	*Average Number of Notifications Per Search*
MULTIDISCIPLINARY	3,601	208
EDUCATION	2,226	235
PSYCHOLOGY	110	82

output and give the patron more nearly what he or she wants. Generating thousands of notifications would defeat the system's purpose, which is to give patrons relevant information in a manageable form.

3.2.4 DIFFERENCES IN DEMAND

Most of the demand, as measured in terms of new people served, is for retrospective services. For example, in the fourth quarter of the project year, the number of new current awareness profiles added to the system was 226. During the same three months, 1,848 retrospective searches were performed.

The persons who use the retrospective service differ from those using the current awareness service. For example, in the last week of the fourth quarter of the third project year, MIC did 352 retrospective searches: 203 multidisciplinary, 94 in education, and 55 in psychology. This was an all-time high for one week. Most of the retrospective searches, in fact 85% of them, were performed for students, both graduate and undergraduate. That was not the case for current awareness.

This is shown by comparing the percentage of undergraduates using the services in education and in multidisciplinary fields. Current awareness and retrospective services are offered in both. The comparison showed that during that last week of the project year, more than a third of all the retrospective searches and only 2% of the current awareness searches were for undergraduates. (See Table XV).

TABLE XV. COMPARISON OF USE OF SERVICES BY UNDERGRADUATE STUDENTS

	*Percent of patrons using a service who are undergraduates **	
FIELD	*CURRENT AWARENESS*	*RETROSPECTIVE*
MULTIDISCIPLINARY	2%	41%
EDUCATION	3%	21%
OVERALL	*2%*	*35%*

**Last week of project year*

For a student doing a term paper, the MIC computer-based retrospective services are quick means of developing an "instant" bibliography. He or she, in general, does not have ongoing interests that require a current awareness service for continual updating over a long period of time. An undergraduate student seldom has ongoing interests. His or her interests change with the quarter, as he or she takes on a new set of interests with a whole new set of courses.

3.3 DOCUMENT DELIVERY

The MIC Document Delivery System includes: (1) making the notification card easy enough to use so that a patron, if he or she desires, can obtain the document directly from the library, and (2) providing a first page service for those who want MIC to find the document and make a copy of the abstract.

Further, the document delivery system of the University Libraries as a whole has improved as a result of MIC services. For example, the Libraries will, in the next project year, have increased holdings in government reports.

The current awareness and retrospective search services of MIC generate notices of journal and magazine articles and technical notes, articles, books, conference papers, government reports, and reports of research in progress. Some of these items are in the collections at the Main Library and many are in the collections of the Departmental Libraries (23 of them). Some items are in the form of hard copies, some are on microfiche. Some are available on campus, some have to be ordered, and some have to be borrowed through Interlibrary Loan.

To close the information loop, a relevant document has to be obtained somehow.

3.3.1 LIBRARY RESOURCES

Approximately 2.7 million volumes, representing approximately one million unique titles, are in the collections of the OSU Libraries. The libraries also subscribe to 23,000 journals. The journals are either in the Main Library, or in any one of 23 departmental libraries and ten office libraries, or in the Undergraduate Libraries. The books are also scattered among the various libraries within the OSU system.

The collections are tied together by an automated circulation system for books and by the Central Serial Record (CSR) of the Serials Division for journals. You can call the circulation system, find out if a book is in the OSU collection and charge it out over the phone. You can call CSR to check on journal holdings.

Backing up the OSU Libraries resources is the Interlibrary Loan Office, which will process requests for materials that are not in the OSU collections but that are in the collections of other libraries.

In order to help smooth the interface between MIC services and the library resources, MIC redesigned the card slightly from that shown in Figure 8. Each notification now specifies at the top of the card whether the item in question is a journal article, government report, conference paper, or book. Explanations of the cards are included with all retrospective searches. See Figure 12 for a sample of a revised information sheet that will be included with the Multidisciplinary Retrospective Search Service.

(front side)

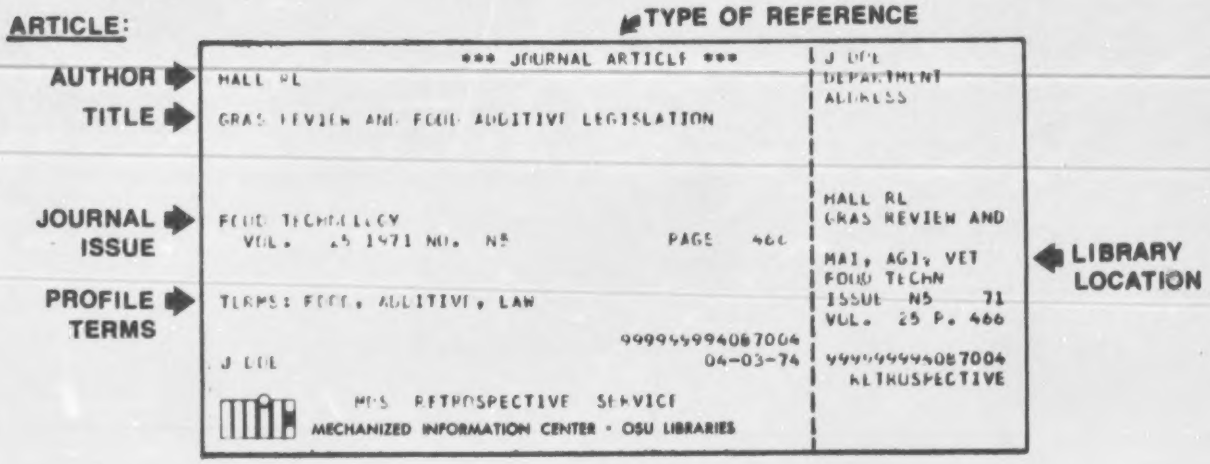
Mechanized Information Center · The Ohio State University Libraries

MDS RETROSPECTIVE SERVICE CARDS

These cards are the result of your search request. Our computer-based system searched more than 1.9 million items in the multidisciplinary data base to select these references. We hope you find them useful.

If you were not satisfied with the results or if you would like another search run on a new topic, let us know.

Call MIC at 422-3480 or stop by our office at 10 Lazenby Hall, 1827 Neil Avenue, between 8 a.m. and 5 p.m. Monday through Friday.


ARTICLE:
TYPE OF REFERENCE
AUTHOR
TITLE
JOURNAL ISSUE
PROFILE TERMS
LIBRARY LOCATION

*** JOURNAL ARTICLE ***

HALL RL

GRAS REVIEW AND FOOD ADDITIVE LEGISLATION

FOOD TECHNOLOGY
VOL. 25 1971 NO. N5 PAGE 466

TERMS: FOOD, ADDITIVE, LAW

9999999994087004
J DOE 04-03-74

MDS RETROSPECTIVE SERVICE
MECHANIZED INFORMATION CENTER · OSU LIBRARIES

J DOE
DEPARTMENT
ADDRESS

HALL RL
GRAS REVIEW AND

MAI, AGI, VET
FOOD TECHN
ISSUE N5 71
VOL. 25 P. 466

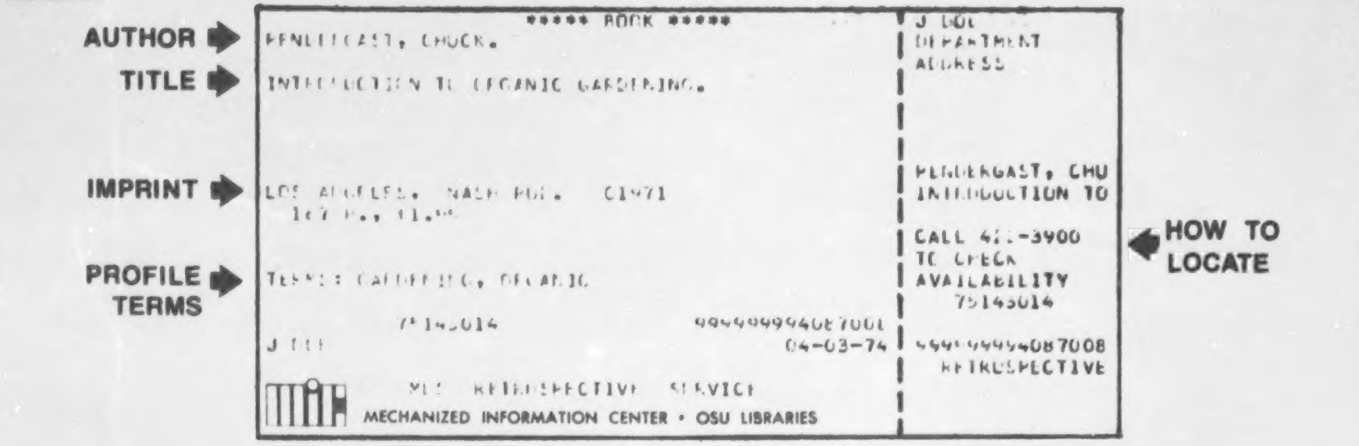
9999999994087004
RETROSPECTIVE

LIBRARY LOCATION codes indicate the campus library that has the journal. Codes are for current issues of the journal cited. For further information about journal locations, contact Central Serial Record, 118 Main Library (422-6221).

AGI	AGRICULTURE: 45 Agric. Admin. Bldg., 2120 Fyffe Rd.
AGO	AGRONOMY: 111 Townshend Hall, 1885 Neil Ave.
BOS	BIOLOGICAL SCIENCES: 200 B & Z Bldg., 1735 Neil Ave.
CHE	CHEMISTRY: 310 McPherson Chem. Lab., 140 W. 18th Ave.
CHI	CHILDREN'S HOSP.: Rm 118, 561 S. 17th St., Columbus 43205
COM	COMMERCE: 204 Page Hall, 65 S. Oval Dr.
EDU	EDUCATION: 060 Arps Hall, 1945 N. High St.
ENG	ENGLISH GRAD.: 304 Main Library, 1858 Neil Ave.
ENR	ENGINEERING: 112 Caldwell Lab., 2024 Neil Ave.
FIN	FINE ARTS: 204 Main Library, 1858 Neil Ave.
FOR	FOREIGN LANGUAGE GRAD.: 333 Main Library, 1848 Neil Ave.
GEO	GEOLOGY: 100 Orton Hall, 155 S. Oval Dr.
HEA	HEALTH SCIENCES: 376 W. 10th Ave.
HIS	HISTORY GRAD.: 228 Main Library, 1858 Neil Ave.
HOM	HOME ECONOMICS: 325 Campbell Hall, 1787 Neil Ave.
JOU	JOURNALISM: 100 Journalism Bldg., 242 W. 18th St.
MAI	MAIN LIBRARY: 1858 Neil Ave.
MAT	MATHEMATICS: Math. Bldg., 231 W. 18th Ave.
MUS	MUSIC: 101 Hughes Hall, 1899 N. College Rd.
NOC	NOT IN OSU COLLECTIONS
PER	PERKINS OBSERVATORY (ASTRONOMY): PO Box 449, Delaware, Ohio 43015
PHA	PHARMACY: 207 Pharmacy Bldg., 500 W. 12th Ave.
PHY	PHYSICS: 1011 Smith Lab., 174 W. 18th Ave.
SOC	SOCIAL WORK: 400 Stillman Hall, 1945 N. College Rd.
STO	STONE LAB.: Biological Sciences Bldg., 484 W. 12th Ave.
TOP	TOPAZ: Optometry Bldg., 228 W. 10th Ave.
UND	UNDERGRADUATE: 215 Main Library, 1848 Neil Ave.
VET	VETERINARY MEDICINE: 229 Sisson Hall, 1900 Coffee Rd.
WCL	WEST CAMPUS LEARNING RESOURCES CENTER: 1070 Carmack Rd.

FIGURE 12. INFORMATION SHEET ENCLOSED WITH RETROSPECTIVE SEARCH

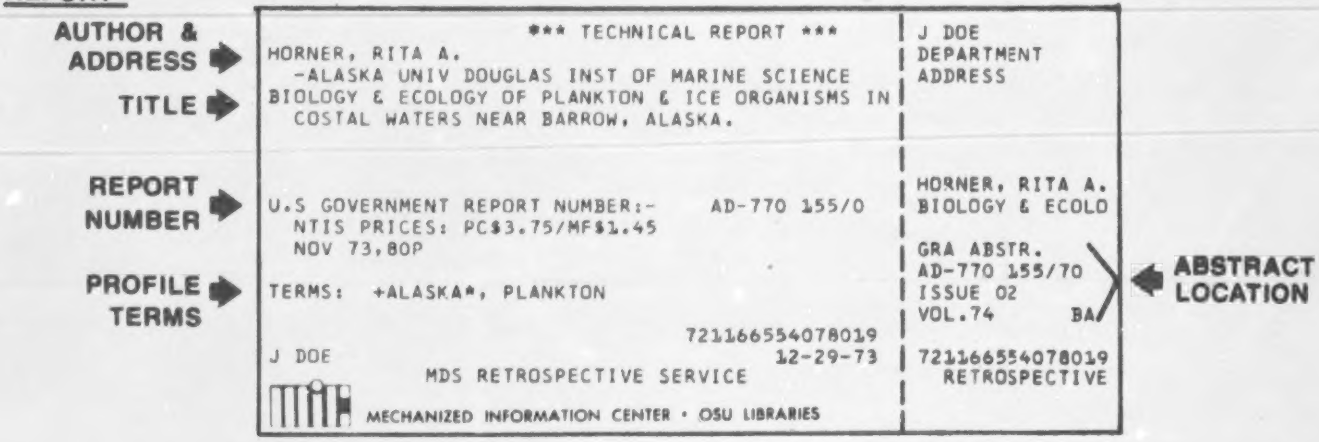
BOOK: *(back side)*


AUTHOR
TITLE
IMPRINT
PROFILE TERMS
HOW TO LOCATE

```
                  ***** BOOK *****                    | J DOE
PENDERGAST, CHUCK.                                    | DEPARTMENT
                                                      | ADDRESS
INTRODUCTION TO ORGANIC GARDENING.                    |
                                                      |
                                                      | PENDERGAST, CHU
LOS ANGELES.  NASH PUB.   C1971                       | INTRODUCTION TO
  167 P., 11.00                                       |
                                                      | CALL 422-3900
                                                      | TO CHECK
TERMS: GARDENING, ORGANIC                             | AVAILABILITY
                                                      |    75145014
          75145014               999999994087008      |
J DOE                                   04-03-74      | 999999994087008
                                                      |   RETROSPECTIVE
            MIC RETROSPECTIVE SERVICE                 |
      MECHANIZED INFORMATION CENTER • OSU LIBRARIES   |
```

To locate a book, call the Library Circulation System at 422-3900. An operator can tell you if the book is available, charge it to your OSU ID number, and mail it to your office or dorm address. Or, check the card catalog in the Main Library lobby.

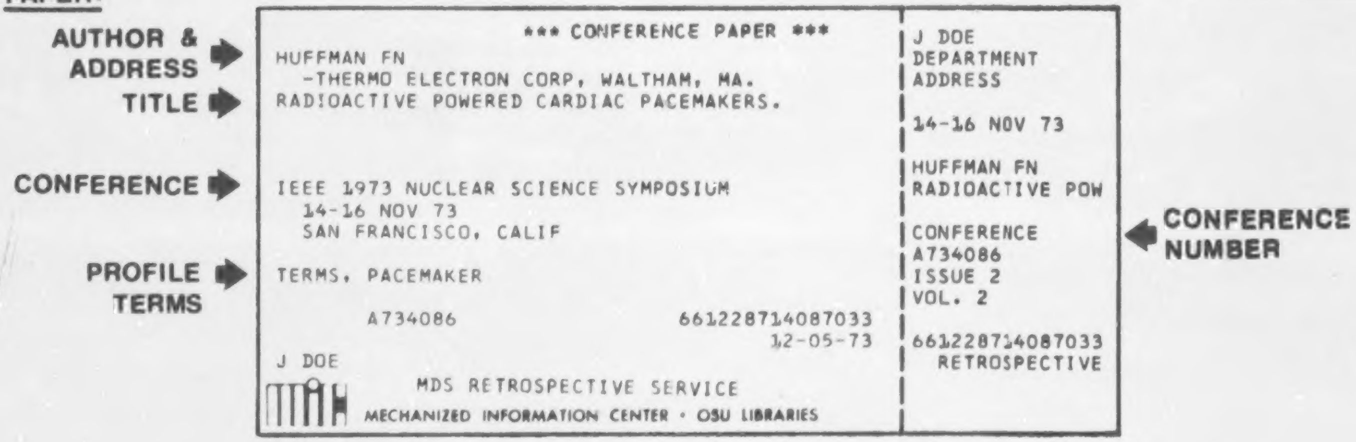
REPORT:


AUTHOR & ADDRESS
TITLE
REPORT NUMBER
PROFILE TERMS
ABSTRACT LOCATION

```
                 *** TECHNICAL REPORT ***             | J DOE
HORNER, RITA A.                                       | DEPARTMENT
  -ALASKA UNIV DOUGLAS INST OF MARINE SCIENCE         | ADDRESS
BIOLOGY & ECOLOGY OF PLANKTON & ICE ORGANISMS IN      |
  COSTAL WATERS NEAR BARROW, ALASKA.                  |
                                                      |
                                                      | HORNER, RITA A.
U.S GOVERNMENT REPORT NUMBER:-      AD-770 155/0      | BIOLOGY & ECOLO
  NTIS PRICES: PC$3.75/MF$1.45                        |
  NOV 73,80P                                          | GRA ABSTR.
                                                      | AD-770 155/70
TERMS:  +ALASKA*, PLANKTON                            | ISSUE 02
                                                      | VOL.74       BA
                                 721166554078019      |
J DOE                                   12-29-73      | 721166554078019
             MDS RETROSPECTIVE SERVICE                |   RETROSPECTIVE
      MECHANIZED INFORMATION CENTER • OSU LIBRARIES   |
```

For an abstract or further information about availability of a report, contact the Reference Department, 124 Main Library (422-6175).

PAPER:


AUTHOR & ADDRESS
TITLE
CONFERENCE
PROFILE TERMS
CONFERENCE NUMBER

```
                *** CONFERENCE PAPER ***              | J DOE
HUFFMAN FN                                            | DEPARTMENT
  -THERMO ELECTRON CORP, WALTHAM, MA.                 | ADDRESS
RADIOACTIVE POWERED CARDIAC PACEMAKERS.               |
                                                      | 14-16 NOV 73
                                                      |
                                                      | HUFFMAN FN
IEEE 1973 NUCLEAR SCIENCE SYMPOSIUM                   | RADIOACTIVE POW
  14-16 NOV 73                                        |
  SAN FRANCISCO, CALIF                                | CONFERENCE
                                                      | A734086
TERMS, PACEMAKER                                      | ISSUE 2
                                                      | VOL. 2
       A734086                   661228714087033      |
                                        12-05-73      | 661228714087033
J DOE                                                 |   RETROSPECTIVE
            MDS RETROSPECTIVE SERVICE                 |
      MECHANIZED INFORMATION CENTER • OSU LIBRARIES   |
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Assistance in determining availability at OSU can be obtained from the Reference Department, 124 Main Library (422-6175). Ordering information can be obtained through the conference number by calling MIC (422-3480).

FIGURE 12 CONTINUED

It explains what is on the cards and where to go for copies of the document.

For example, microfiche copies of RIE (Research in Education) documents are available in the OSU Education Library. If an RIE document is selected by the MIC education current awareness or retrospective search service, the stub of the notification states that a copy is available in Room 060 in Arps Hall, the location of the Education Library.

The bibliographic information is complete enough in all services for a patron to find the items himself or herself. MIC has also held seminars with other library departments to explain the service and the cards.

To check if a book is in the OSU Collection, the stub tells the patron to call 422-3900, the telephone number of the automated Library Circulation System.

As a result of the demand for government reports generated by the MIC services, the OSU Libraries placed an order for SCIM (Selected Categories in Microfiche) from NTIS (National Technical Information Service).

The selected categories include all PB and AD documents in:

(1) Chemistry
(2) Civil, Structural and Marine Engineering
(3) Communication Systems
(4) Computers, Control Theory, Information Theory
(5) Earth Sciences
(6) Economics, Business and Commerce
(7) Energy Conversion (non-Propulsive)
(8) Environmental Pollution and Control
(9) Industrial and Mechanical Engineering
(10) Management Practice and Research
(11) Materials Science
(12) Nuclear Science and Technology
(13) Physics
(14) Transportation
(15) Library and Information Sciences
(16) Building Technology.

3.3.2 *MIC FIRST PAGE SERVICE*

Further, MIC offers a first page service for those people using the Multidisciplinary Current Awareness Service. If a user sends us the stub from a notification card, MIC will try to locate the journal on campus and make a photocopy of the first page of the article. This first page usually contains an abstract of the article; if there is no abstract, then the opening paragraphs will give a summary of the article's contents. If the request is for a government report, MIC makes a photocopy of the page on which the abstract appears in Government Report Announcements.

During the year, MIC made 2,506 first page photocopies. (See Figure 13.) A dime is charged for each first page. The furnishing of copies is an optional feature of the multidisciplinary current awareness service. Many patrons go directly to the library to make copies since there is enough information on the notification card for patrons to find the journal themselves. The copy service is a convenience only. Still, MIC received approximately 87 requests a week for copies.

A patron can use a first page as an interim step before deciding on whether he or she wants a complete copy of the article.

The demand for first pages went down 11% in the third project year from the previous year. This probably shows that MIC has made the notification easy enough for a patron to find the item directly. It is also sometimes cheaper and faster for him to do so.

MIC implemented the Journal Library Location Table (LIBLOC) to make it easy to locate a journal. It is constructed so that MIC can print the location of the cited journal on the stub

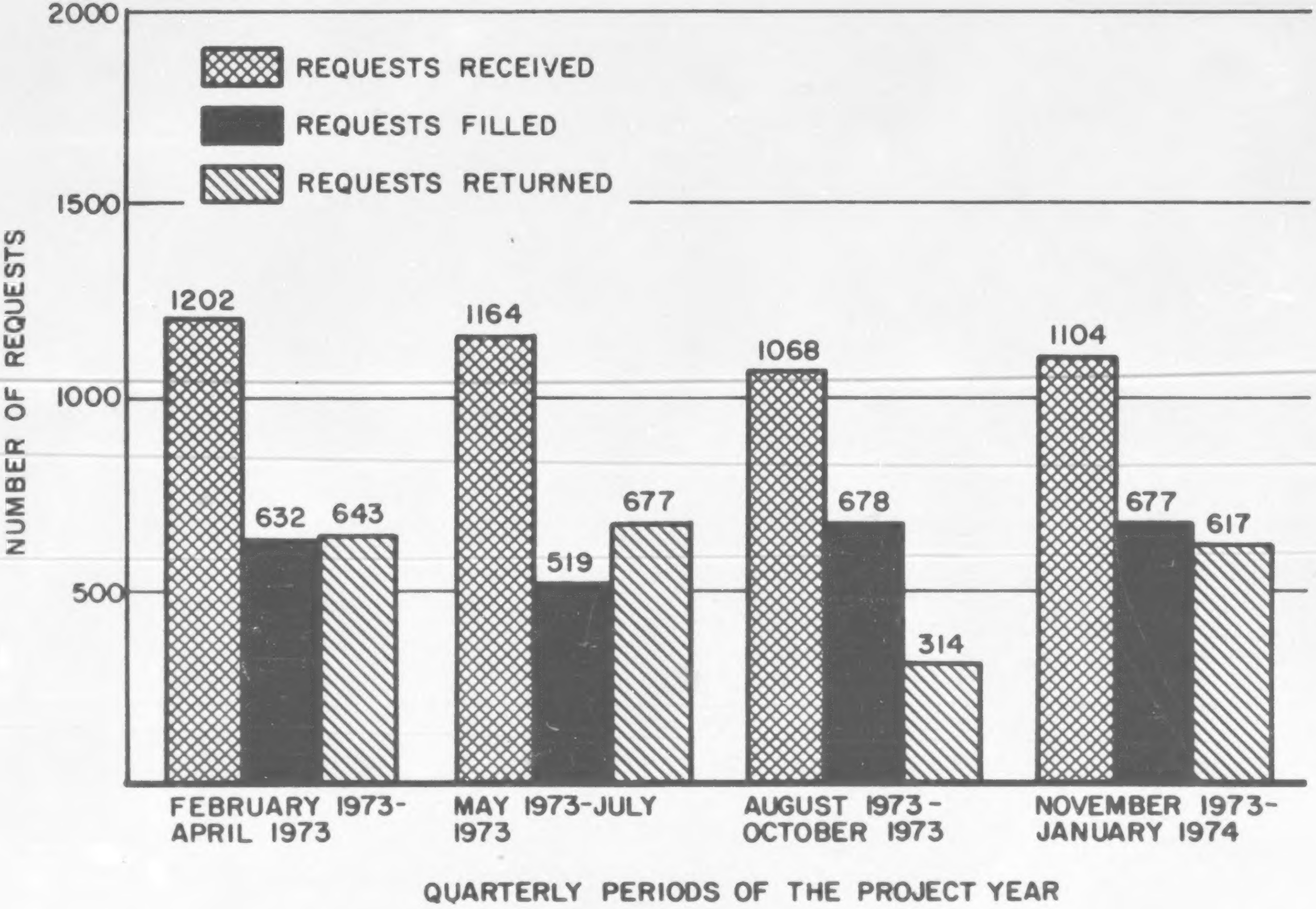


FIGURE 13. FIRST PAGE SERVICE

91

92

of the current awareness notification cards. This facilitates the first page service and also aids many patrons in going directly to a department library to locate an article.

The table also includes the journals in the Social Sciences data base. MIC will look into offering a first page service for Social Sciences Current Awareness in the next project year.

3.4 OTHER REFERENCE SERVICES

Because MIC is an integral part of Public Services of the OSU Libraries and the MIC Information Specialists are reference librarians, MIC provides reference services other than computer-based ones.

These services range from telling people how to use the card catalog at a department library to recommending to graduate students that they contact the Research Consultant at the Main Library to help them with their dissertations. At times, because MIC actively advertises for patrons to use its services, the first contact an incoming student has with the whole Library system is MIC. In these cases, MIC explains the library system, including the decentralized collections and centralized automated circulation system. During the project year, a thousand such requests were handled by the MIC staff.

In one morning, for example, MIC Information Specialists told different patrons that the Black Studies Library has information about Malcolm X, that the Reference Department and the History Graduate Library would have information on the population trends along the Chinese side of the Sino-Soviet border, and that the History

Graduate Library and the Health Sciences Library could help locate information on the history of Medicine in Ethiopia.

Two of the MIC information specialists had been reference librarians in the Education Library and one had worked as a cataloger in the Technical Services Division. All are familiar with the OSU Collection and resources.

In these ways, MIC is helping to make the OSU collection as accessible as possible to patrons.

SECTION 4

SYSTEMS AND PROGRAMMING

The operation of the MIC search software during the third project year demonstrated the economy and reliability of the basic system. In addition, the system accommodated a steadily increasing number of patrons, without difficulties. Therefore, most efforts were devoted to implementing additional services or improving the existing services, rather than developing new systems. Among the new systems and services and other improvements were:

(1) design and analysis of a statistical and cost information system for management decision-making

(2) implementation of new services: Social Sciences Current Awareness, Agriculture Current Awareness, and Psychology Retrospective Search System

(3) expansion and updating of the multidisciplinary and education retrospective data bases

(4) modification and adjustment of operational programs because of changes in functional requirements or in patron needs

(5) development of new system programs because of a change of system processing philosophy or because of additional patron requirements

(6) development of, and experimentation with, a post-processor for improving retrieval efficiency

(7) implementation of studies to determine: (a) factors contributing to rising computer cost, (b) time lag between the ISI and PANDEX data base tapes with respect to a particular journal, and (c) the automatic compilation of a thesaurus

(8) preparation of a technical manual that describes the MIC bibliographic retrieval software.

A brief description of each of these activities related to systems and programming efforts is presented in this section.

4.1 STATISTICAL AND COST INFORMATION SYSTEM

The costs of processing, storing and retrieving information are a matter of concern to MIC and The Ohio State University. In general, an information center's operations are highly analogous to a typical business firm in which management is dependent on reliable cost information for effective planning, controlling, and decision-making. Without such information, an organization lacks a communication mechanism, a measuring device and a basis for future operating performance projection. It is also necessary in the setting of fees for outside users.

In addition, a well-designed generalized cost information system should provide the necessary tools for cost-effectiveness analysis. Such a system has been designed by MIC and is described in this subsection.

4.1.1 THE SYSTEM OVERVIEW

Basic to the system is a reports generator that accepts detailed descriptions of the budgetary data, operating statistics, costs, and interrelationship of all components in the system, and then computes the required cost information as system output. (A simplified system structure is shown in Figure 14.) Specifically, the following types of input data are used by the system:

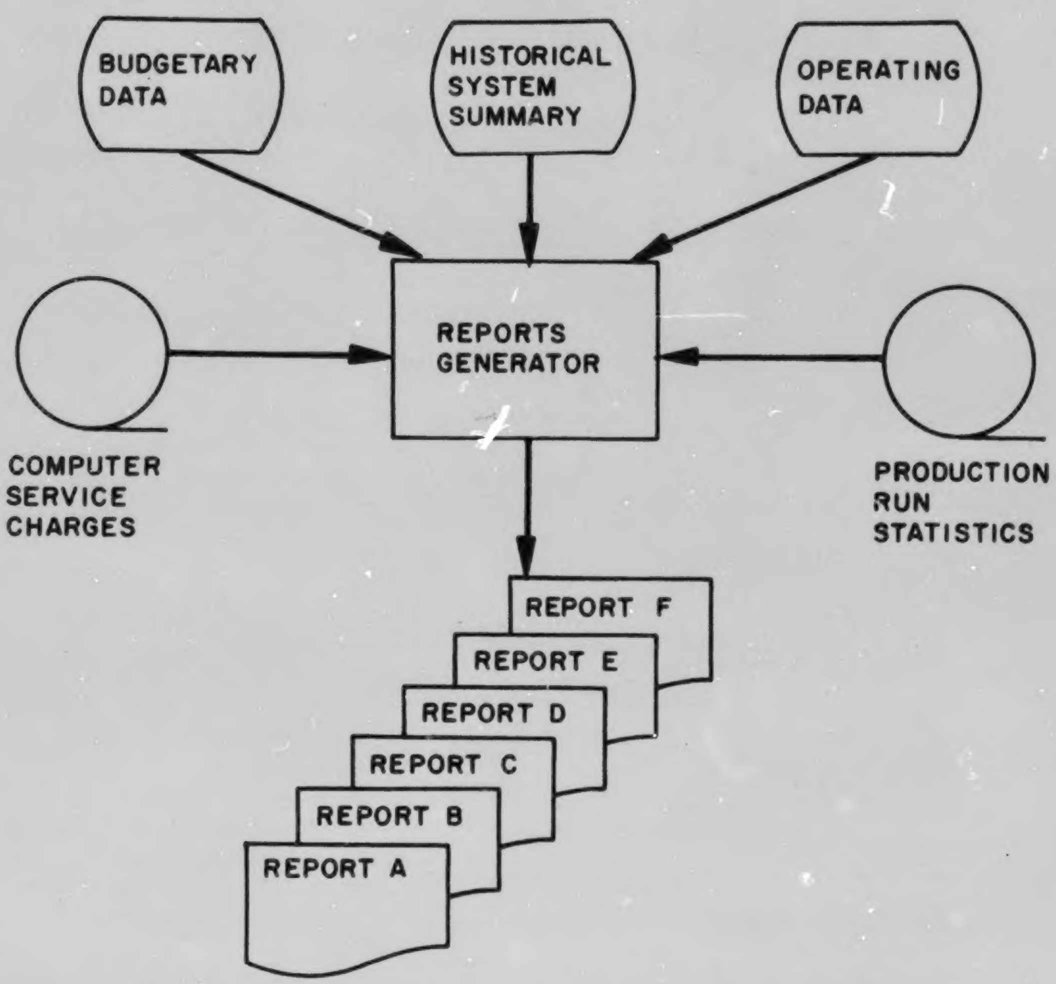


FIGURE 14. OVERVIEW OF MIC COST AND STATISTICAL INFORMATION SYSTEM

(1) computer service charges
(2) production statistics
(3) budgetary data
(4) operating data.

For each cost item, the computer program computes the actual expense and produces specified monthly and quarterly cost figures for each service, each profile, and each hit processed through the system.

4.1.2 METHODS OF DATA COLLECTION

Perhaps one of the most difficult tasks of system analysis and design is the creation and determination of data collection procedures. The ultimate acceptance of a system output is largely dependent upon the usefulness of the information which, in turn, is dependent upon the validity of the input data to the system. The sources and methods of collection of the four types of system input data are:

(1) Computer Service Charge - Despite the problem of non-standard computer charge, different algorithms used from installation to installation, modern computer systems can keep track of their own activities and can provide the capability of producing a machine-readable accounting file for their users. Ordinarily, the tasks performed by the computer activity in an information center can be grouped into two types of jobs: (1) production runs, and (2) research and development. The service charge data are automatically supplied, on tape, by the computer system at the end of each month. It contains both production and development jobs. The data content includes both the time cost, such as CPU time and core time, and the dollar value of each computer run derived from the charge algorithm implemented in the computer accounting system.

(2) Production Statistics - Like the computer system, the MIC search system also keeps track of its own production activity by recording its production statistics, such as the number of users, the number of profiles, the number of citations searched, and the number of hits generated. The statistics are automatically generated and stored on a magnetic tape after each production run. It contains statistics for both an individual user and an entire batch job.

(3) Budgetary Data - The MIC activities are partly funded by an NSF grant and partly by The Ohio State University Libraries budget. Each year, the Center is budgeted to achieve a programmed plan, which includes development, implementation, and evaluation of mechanized information storage and retrieval systems. The budget can be classified into broad categories, such as administration, faculty research, information specialists, programming, operations, computer service, equipment rental, data bases, and supplies. The raw data are manually compiled, then a budget file is created on disk by a computer program at the beginning of each budget year upon respective grant and budget approval.

(4) Operating Data - Since the NSF-funded activities are currently treated as a research project, the disbursement of the NSF funds is monitored by The Ohio State University Research Foundation. Each month, MIC receives a project financial summary from the Research Foundation. The summary contains direct and indirect costs. The direct costs cover personnel, material and services, and equipment. Other miscellaneous cost items that are treated as direct costs are travel and operating supplies. The indirect costs are a fixed percentage of salary and wage costs and cover most overhead. These data are automatically maintained on disks for each month with yearly cumulative data.

4.1.3 *ESSENTIAL FEATURES OF THE SYSTEM*

The components of the cost information system are designed specifically for MIC. The cost information requirements, nature and categories of the cost structure, the methods and sources of system inputs, the cost of operating the cost information system, and the automatic record-keeping capability of the retrieval systems were analyzed carefully in the design of the system. The IBM 370/158 computer system is used for the data processing requirements and the necessary computer programs were developed to handle all the system tasks, which include the generation and storage of statistical information, computation of the computer service charges, budget allocation, and cost distribution. Five system features were considered essential and were designed into the system.

First, since all costs are accounted for under broad categories, the applicability of the methodology is unlimited. If a detailed break-down is desirable, the system is flexible enough to handle it by expanding the system input description.

Second, cost distribution is based on an average approach rather than using job order technique. All costs incurred for a given service were collected for a period of a month and later averaged over the unit searches. This approach is workable and valid in an environment where all services are using the same search system, thereby eliminating the variance in unit processing cost. Best of all, this approach lowers the overhead of operating the cost information system by simplifying the data collection procedures.

Third, a historical system summary is automatically assembled, computed and stored on disks from the various system data sets after each production month. This summary file contains cost, operating, and statistical summaries of each production period such as cost per profile per service by month and by year. The

100

inclusion of such summary data in the system not only allows the production of the cumulative report, but also provides the capability of forecasting the system demands, such as the expected growth rate of services based on past history.

Fourth, the cost system is totally integrated within the MIC mechanized search system. Consequently, it is very simple and economical to operate. Redundancy is kept to the minimum.

Fifth, from a total system point of view, the cost information system can be considered a subsystem. When it is linked with other subsystems, such as the user directory, additional benefits could be derived in the area of automatic billing and bookkeeping for MIC patrons.

4.2 SOCIAL SCIENCE CURRENT AWARENESS SYSTEM

The Social Science Information Service was the first of the three additions during the project year. The main tasks were to convert the tapes which contain the journal information and to make certain modifications in the search software. The MARC tapes, which are already converted to the correct format for the multidisciplinary services, are included in the social science data base.

4.2.1 DATA BASE CONVERSION

Social Science Citation Index (SSCI) tapes from the Institute for Scientific Information (ISI) come in standard ISI format. It was decided when the service was first offered that no distinction would be made between index terms and title terms. Hence a modification to ISIPDX, the ISI-PX conversion program, was made so that it converts SSCI tapes to Pandex format without picking words from the title of the citation. The program screens out everything but articles, reports, technical papers and technical notes. It also takes whatever is available from the SSCI tape and creates the appropriate Pandex fields for them.

The following tagged fields are created for each citation: 100 (author), 200 (page), 870 (volume), 555 (issue), 621 (year), 245 (title), 077 (cluster: volume, year, issue number), 999 (source article number), 035 (ISI journal abbreviation), 088 (source title), F01 (article code), F02 (number of references), and F03 (ISI accession number). Fields F01, F02, F03 are locally generated field tags to store information available in ISI tapes but not in Pandex tapes. The MIC journal library location file (LIBLOC) is used to look up the full title of the source. For journals not in LIBLOC, the ISI abbreviation is placed in the 088 field and a message is printed.

The program is written in OS/370 Assembler language and runs in 20K of core. It takes approximately 10 seconds CPU to process 1800 records on an IBM 370/158 running under OS/MFT with HASP.

4.2.2 CHANGES REQUIRED

MIC implemented a special version of the WORDGEN program to process tapes that are in Pandex format but that do not include thesaurus terms as searchable items. The special program, called PXGEN2, allows the use of reformatted ISI Social Science Citation Index Source tapes with the MIC search system. For the Social Science Information System, these tapes are merged with the MARC tapes to form a broader based service.

Although a new version of the WORDGEN program is used by the SSIS System, the software is functionally the same as that used for the multidisciplinary current awareness service. It is identical to that used for the Agriculture service. The search logic employed is essentially the same as that used for the multidisciplinary current awareness service except that thesaurus terms are not searched.

Items from the ISI tape can be searched for author, title terms, and journal abbreviations. Those from MARC can be searched for the author, title term, and the LC call number. The LC topical and geographical subject added entries are treated as if they were part of the title for the purpose of searching.

To facilitate the printing of various data elements retrieved, a special version of the MICPRINT program has been prepared to process the system output. In addition, the library locations of hundreds of social science journals have been added to the search system library location file.

A logic flow diagram of the search system is shown in Figure 15.

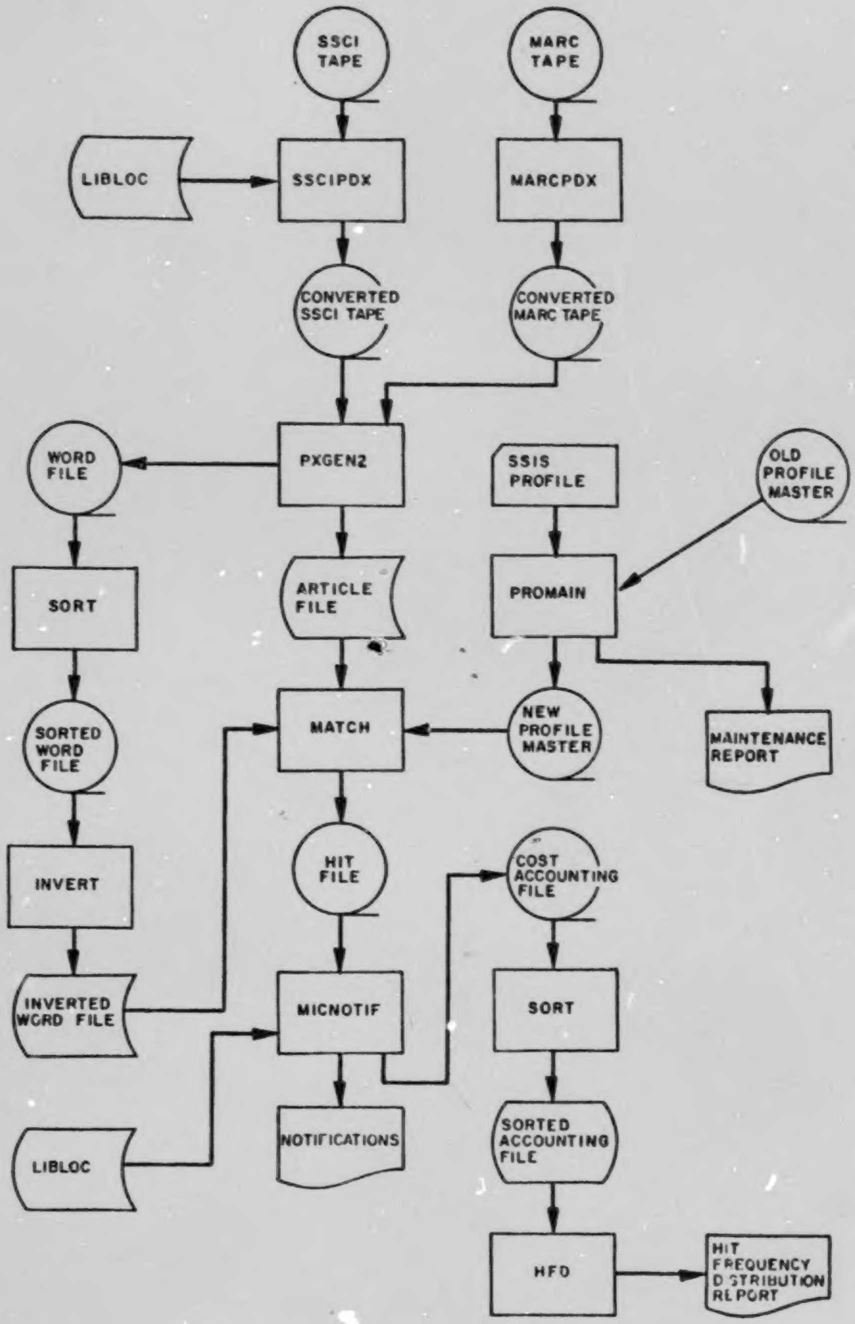


FIGURE 15. SOCIAL SCIENCES CURRENT AWARENESS SEARCH SYSTEM

4.3 AGRICULTURE CURRENT AWARENESS SYSTEM

A special WORDGEN program that allows the use of the Bibliography of Agriculture tapes with the MIC search system was written. The program is called BAGEN. The searchable data elements are the authors and the title words. It was decided not to use the Bibliography of Agriculture thesaurus terms because of the high level of activity in updating the thesaurus and the resultant changes in old profiles. Full journal titles, but not abbreviations, are included on the tape.

Although a new version of the WORDGEN program is used in the agriculture search system, the software is functionally the same as that used for the multidisciplinary current awareness service.

A special version of the MICPRINT program to print the system output was developed. Since no library location information is necessary for this disciplinary service, the library location file is not accessed.

A logic diagram of the system depicting the various program tasks of the search system is shown in Figure 16.

4.4 PSYCHOLOGICAL ABSTRACTS RETROSPECTIVE SEARCH SYSTEM

The Psychological Abstracts Retrospective Search system was completed and implemented in the middle of January 1974. The Psychological Abstracts data base consists of 139,629 citations covering a period of 1967 through 1973, inclusively.

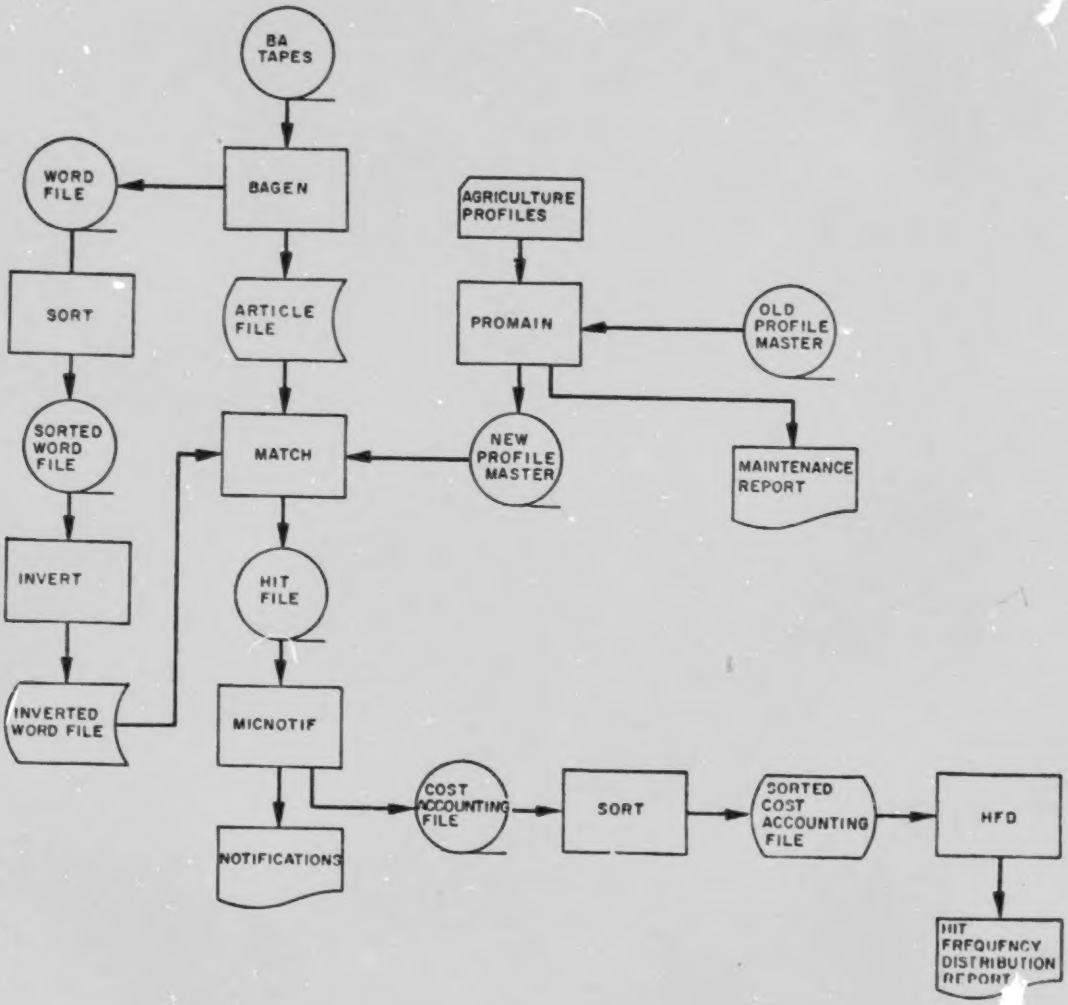


FIGURE 16. AGRICULTURE CURRENT AWARENESS SEARCH SYSTEM

4.4.1 *GENERATION OF PSYCHOLOGY RETROSPECTIVE DATA BASE*

PAGEN is a PL/1 program written to generate an article file and a word file from Psychological Abstracts (PA) tapes supplied by the American Psychological Association, Washington, D. C. The program reads the data base tape and picks out the following information to store in the article file: year, volume, and issue of data base, abstract number, coden (if any), classification code, subject terms, author(s), title, source document title, type of publication (if present), and source document description. (See Appendix C for the format of the Psychology Abstracts records.) If the language code indicates a foreign language, it is placed in front of the citation title in accordance with ISI convention.

The program ran in 80K of core and took about 58 minutes CPU to generate seven years of Psychological Abstracts tapes on an IBM 370/158 operating under OS/MFT with HASP.

The word file consists of the searchable items in the service: authors, subject index phrases, words from the title, subject terms, and subject index codes. Author names are treated the same way as in the other services: (1) an '@' sign, (2) the last name followed by a blank, and (3) the first letters of the first and second names, if any. If the last name is longer than eight characters, only the first eight characters are used. Words from the title and subject index phrases are treated as title terms, and are preceded by a plus sign. Subject index codes and subject terms treated as index terms, a twelve-character string. The capability of searching subject index codes is an advantage because if an information specialist wants to search, for example, Goldstein Scheerer Object Sort Test, he or she only has to code the index code 20290 in the profile instead of coding all five words.

The retrospective data base is organized on a yearly basis. There are seven article files and seven word files covering the period from 1967 to 1973. There is a total of 139,629 citations in the entire data base. The article files take up more than 6,500 tracks and the word files more than 1,400 tracks on 3336 model 1 disk packs.

Figure 17 gives a schematic of how the data base was generated.

4.4.2 OTHER SYSTEM MODIFICATIONS

The necessary additions and modifications for printing the output from the Psychological Abstracts Search were made to the discipline version of the MICP[illegible]NT program. Two distinctive features of these modifications were the printing of the abstract number and the subject index codes and index terms.

A system flow chart depicting the various program tasks is shown in Figure 18.

4.5 EXPANSION OF RETROSPECTIVE DATA BASES

During the project year, both the multidisciplinary and education retrospective data bases were updated.

4.5.1 MULTIDISCIPLINARY RETROSPECTIVE SERVICE

The multidisciplinary retrospective data base has been

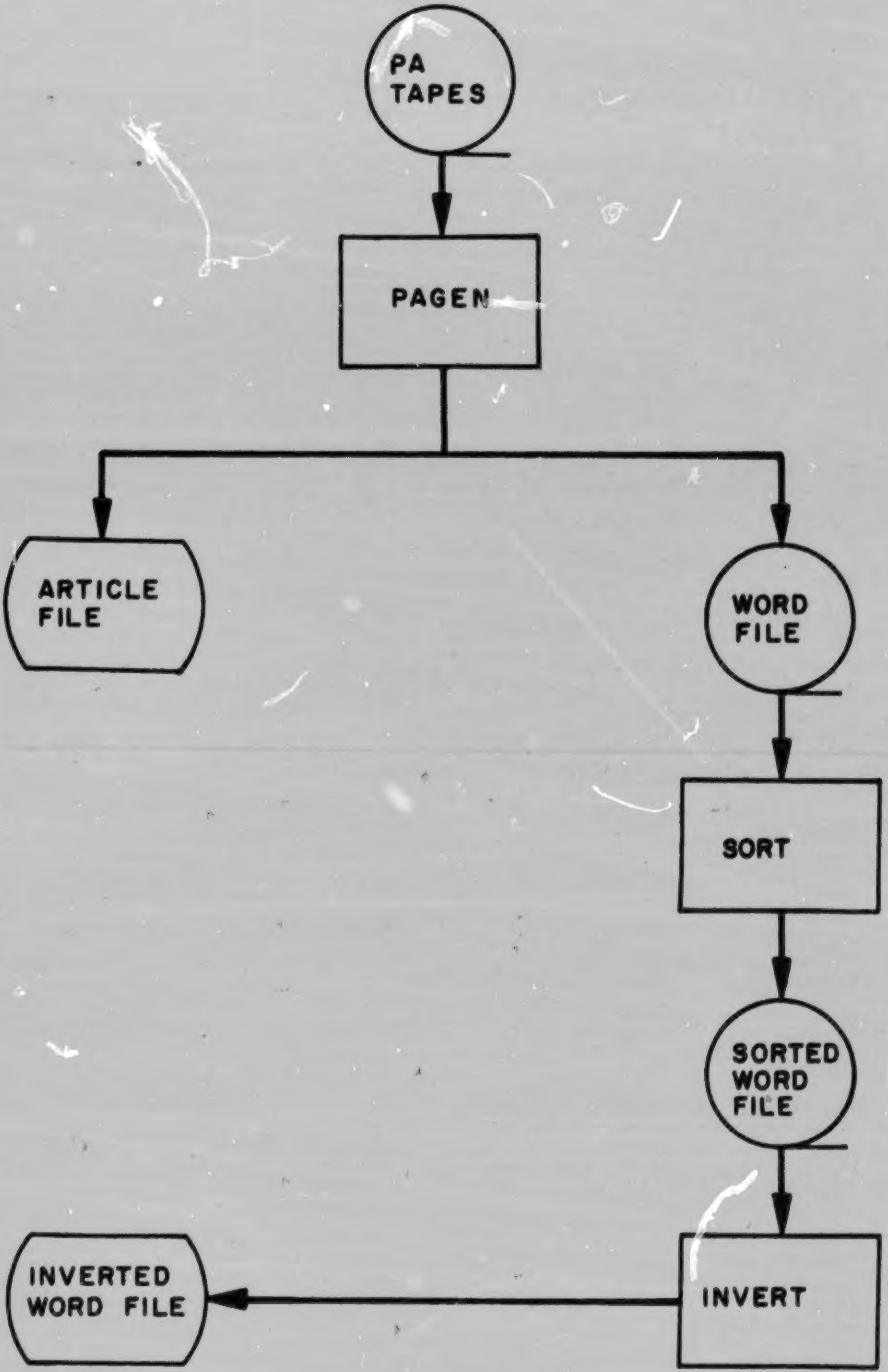


FIGURE 17. GENERATION OF PSYCHOLOGY RETROSPECTIVE DATA BASE

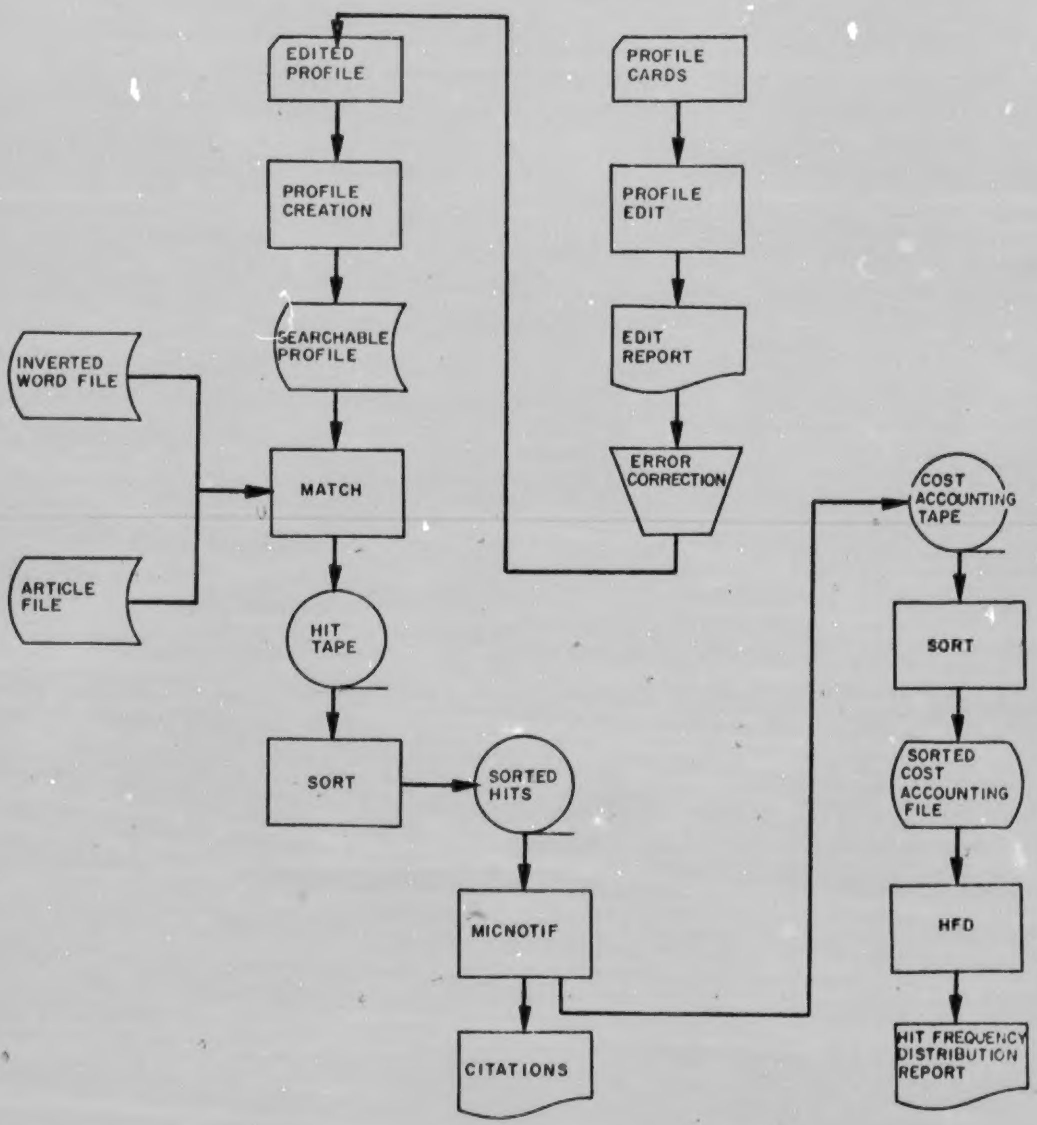


FIGURE 13. PSYCHOLOGY RETROSPECTIVE SEARCH SYSTEM

updated to include the data base searched by the multidisciplinary system up to December 1973. It now includes the following: (1) ISI source tapes,1968 through issue 44 of 1973, (2) NTIS source tapes,1968 through issue 34 of 1973, (3) Pandex journals, issue 34 of 1971 through issue 42 of 1973, (4) Library of Congress MARC tapes,volume 3, number 48 (1971) to volume 5, number 29 (1973), (5) Current Programs for 1973, issues 1 through 4. There is a total of about 1.92 million citations distributed over 23 article files and 23 word files.

The 46 data sets are stored in 13 of the 3336 model 1 disk packs.

4.5.2 EDUCATION RETROSPECTIVE DATA BASE

At the end of the previous reporting year, the education retrospective data base consisted of citations from Research in Education (RIE), November 1966 to June 1972. Since then, the base has been updated to include Current Index to Journals in Education (CIJE) from January 1969 to June 1973, as well as RIE issues from July 1972 to June 1973. It now contains 134,268 citations.

The data base is organized into nine article files and nine inverted word files. The article files take up about 6300 tracks and the inverted files about 1200 tracks.

4.6 POST PROCESSOR

Testing of the program PHASE2 of the Post Processor progressed. The program is designed to eliminate false drops from the output of the regular MIC system by re-searching each notification for special conditions which cannot be tested by the original search program (MATCH). These extra conditions include required spatial relationships and the ability to search for co-occurance of a word with a character string which is not a word in the definition originally used. For example, you can require Term A to precede or follow Term B or to be immediately adjacent to each other. You can search for the phrase "Vitamin C" or the word "C" occurring with "Vitamin".

The program appears to perform as required. Only one change was made to the original decision table describing its operation. (See Table XVI for the new decision table). The specifications for PHASE2 were written soon after MIC became fully operational but before many of the difficulties inherent in the less familiar data bases became clear.

Therefore, the program works well with data bases which are indexed solely on the title or thesaurus words obtained from the title. Unfortunately, many of our current problems involve false drops from intellectually added descriptor terms. These do not have the spatial relationships necessary for analysis by PHASE2. Also in many cases not all of these added descriptors fit in the notification record and thus cannot be detected at all.

The most common example of a situation which PHASE2 cannot handle is the indexing of a report in NTIS on a study of ocean currents under the term "Computer System" because the data was analyzed by computer.

In summary, the program solves the problems it was designed to solve, but not the newer problems. In many cases, experience has provided information specialists with alternate ways to solve the original problems without introducing PHASE2 and its much more complicated profiling language. The final decision on the Post Processor will be made in the next project year.

TABLE XVI. REVISED POST PROCESSOR DECISION TABLE

CONDITIONS																							
PHASE 1 HITS PRESENT	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PHASE 2 PROFILE PRESENT	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
LOGIC	-	-	-	N	N	N	N	N	N	N	N	N	N	I	I	I	I	I	I	I	I	I	I
TERM A	-	-	-	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y
END OF PHASE 2 PROFILE	-	-	-	N	Y	N	N	N	N	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	Y
TERM B PRESENT	-	-	-	-	-	N	Y	Y	Y	N	Y	Y	Y	-	-	N	Y	Y	Y	N	Y	Y	Y
POSITIONAL INFORMATION REQUIRED	-	-	-	-	-	-	N	Y	Y	-	N	Y	Y	-	-	-	N	Y	Y	-	N	Y	Y
POSITIONAL INFORMATION CORRECT	-	-	-	-	-	-	-	N	Y	-	-	N	Y	-	-	-	-	N	Y	-	-	N	Y
DECISION			A		A		R		R	A	R	A	R		A		A	R	A	A	A	R	A
ERROR		X																					
NEXT PAIR				X		X		X						X		X							
END-RUN	X																						

NOTES: (1) N MEANS NO OR NORMAL, Y MEANS YES, I MEANS INVERTED, A MEANS ACCEPT, R MEANS REJECT, AND X INDICATES "THIS ACTION TAKEN".

(2) READ DOWN EACH COLUMN TO DETERMINE WHAT SET OFCONDITIONS PRODUCES WHICH ACTION. FOR EXAMPLE, IN COLUMN 1, IF PHASE 1 HITS ARE NOT PRESENT AND A PHASE 2 PROFILE IS PRESENT, AN ERROR MESSAGE WILL BE PRINTED OUT.

4.7 SYSTEM STUDIES

In addition, three studies--computer costs, lag time, and automatic thesaurus--were performed during the project year.

4.7.1 COMPUTER COSTS

A study was made to determine whether the rising computer service cost was attributed to an increase of MIC's production volume or to a shift of unit charges from $1.26 to $3.78 because of the upgrading of the computer system at University Systems Computer Center. It was ascertained that the shift of a unit charge from $1.26 to $3.78 prior to the installation of the IBM 370/158 computer did have an unfavorable effect on the computer service charge. The increase in unit charge rate was not in proportion to the increase in computer system performance in going from an IBM 145 to the 155.

However, after the installation of the 158, the costs dropped. This was due to the fact that the 158 is about 20% to 40% faster than the 155.

Thus, the conclusion was that the rising computer service charge was partly due to an increase of production volume and partly attributed to the upward shift of unit charges until the installation of the IBM 370/158.

4.7.2 LAG TIME

Currently, the overlap of journal coverage between the ISI and PANDEX data bases is resolved by retaining the citations from the PANDEX data base. However, in order to improve the quality of

MIC's search service, MIC initiated a study to determine the respective time lag of the ISI and PANDEX data bases with respect to a particular journal. The result of this study will undoubtedly yield some meaningful information and aid in deciding whether the ISI citations rather than the PANDEX citations should be retained as the primary source for journal coverage for the multidisciplinary current awareness system.

Primary results indicate that Pandex citations do lag behind ISI citations.

4.7.3 *AUTOMATIC THESAURUS*

An experimental study to determine the feasibility of developing an automatic procedure for constructing a thesaurus for use in the MIC environment was begun. It was considered feasible to design a procedure which calls for development of an algorithm that will automatically assemble terms from the user profiles, existing word frequency list, PANDEX thesaurus, and several qualified technical thesauri. From a practical point of view, all PANDEX thesaurus terms and any title terms that occur in both the word frequency list and user profiles are possible candidates for the new thesaurus which will have Broader Term, Narrower Term, Related Term, Used Right, Used Left, To and See References. The relationships between terms will be established by scanning other machine-readable thesauri for term associations.

There are two major features which MIC believes to be unique to this procedure--the term selection algorithm and the positional terms usage relationship (for example, used left and used right).

These stem from a basic approach which extracts the user's search terms and makes them available for possible inclusion in the new thesaurus. This approach will enable MIC to develop a thesaurus which is not only user population oriented, but also keeps up with the ever changing world of the literature.

4.8 COMPILATION OF A TECHNICAL MANUAL

A technical manual for the MIC bibliographic retrieval software was prepared in the project year. The objectives of the manual were:

(1) to describe completely the nucleus of the MIC Current Awareness Search system

(2) to provide the potential users of this software package with necessary information for their evaluation

(3) to give systems and programming staffs of user organizations pertinent technical information for implementing the system.

The manual includes a description of the software and the programs, the system requirements and constraints, program description, system implementation instructions and a compilation of the program library. Users may select a particular segment that meets their need at a specific time. Within each segment, information is presented according to the logical as well as physical flow of the system activities.

The manual is called MIC Bibliographic Retrieval Software Technical Manual. It was written and published in August 1973.

4.9 PREPROCESSING OF PANDEX AND NTIS DATA BASES

Preprocessing of PANDEX, Current Programs and NTIS tapes from Macmillan Information was initiated in April 1973. Preprocessing was necessitated by the dynamic nature of the PANDEX thesaurus. The PANDEX thesaurus is updated periodically to correct errors and to put in changes. For example, the word "system" was not in an older version of the thesaurus but became a true index term in a later version. Thus, if the word "system" appeared in a journal when the older version of the thesaurus was being used, it would not appear in an index field, tagged 690, of the data base tape. Then, information specialists would have to code "+system" to retrieve any citation with the word "system" in the title. However, if the word "system" appeared in a journal when the later version of the thesaurus was used, it would appear in a 690 field of the data base tape and had to be retrieved as a true index term (no plus sign).

This means that every time there is a change in the PANDEX thesaurus, the changes have to be determined and all of MIC's two thousand or so current awareness profiles have to be updated. This can be done by the computer. In fact, MIC wrote programs to detect the changes made from one thesaurus to another and to update the profiles accordingly. However, there are many times when the course of action is not a clear-cut case of changing a "non-plus" term to a "plus" term or vice versa. For example, the word "pierce" was an index term in one version of the thesaurus and the word "pieced" was converted to "pierce" by the thesaurus. In the next version, both words disappeared completely from the thesaurus. Thus, every time the word "pierce" appears in a profile, it is not possible to decide whether to replace it by "+pierce" or "+pieced" without looking at the profiling history or actually calling the patron up.

To avoid having to go through this time-consuming process every time the thesaurus is modified and taking into consideration the fact that the MIC search capabilities can usually get around any shortcoming of the PANDEX thesaurus, it was decided to freeze one particular version of the PANDEX thesaurus for profiling purposes. Thus, it becomes necessary to preprocess PANDEX and NTIS tapes to throw out index terms created by the supplier and put in MIC's own. This decision also avoids having to regenerate the entire multidisciplinary retrospective data base every time the thesaurus is modified. This was an important consideration in the decision to freeze the thesaurus because there are currently 1.92 million citations in the multidisciplinary retrospective data base.

To accomplish the above preprocessing task, a new program called NTISPP was written. This program preprocesses PANDEX and NTIS tapes from Macmillan before they are searched by the multidisciplinary current awareness service. For PANDEX journals, the program tests for the absence of fields 100 and 245, the author and title fields, and counts the number of citations without any title or without any author. It also changes the field tag of all 690 fields to F13 and picks out all the words longer than 2 characters in the title field. For NTIS tapes, which come in PANDEX format from Macmillan, the program also tests for the absence of the author and title field in every citation. It changes all 690 fields except those with subfield tag N to F13 and picks out the words longer than 2 characters long in the title field and in the asterisked descriptor field (field tag 690N or 380). The word file generated for both PANDEX and NTIS tapes are passed onto the thesaurus look-up program ISIPDX2. This program checks the words against the MIC stoplist, looks them up in the MIC thesaurus, and creates new 690 (index term) and F04 (title term) fields. These new fields are then put back into the PANDEX or NTIS tape created by NTISPP.

The program runs in 26K and takes about 11 seconds to process 5000 NTIS records on an IBM 370/158 operating under OS/MFT with HASP. It is written in OS Assembler language.

4.10 REVISED CALLING PROCEDURE FOR MOUNTING MULTIPLE DISK PACKS

Because the MIC search systems are basically disk oriented, the mounting and dismounting of a large number of disk packs becomes a rather complicated task in a large computer data processing environment. In view of the complexity involved, a simplified procedure was set up, as was mentioned in the last annual report. However, the upgrading of computer system from the IBM 370/145 to the larger IBM 370/155 resulted in a change in the procedure for mounting different disks for different steps within the same job. Because of the larger size of the computer, more jobs are running concurrently. A basic error in the logic of IBM's Operating System resulted in a conflict between the additional jobs and the original procedure used to change the disks during a retrospective search.

A program, MOUNT, was written. It requests the operator to

120

mount the required disks and then waits for his reply that the task has been completed. This allows use of the standard disk mounting procedures used by the operator. The procedure is described in Appendix D.

4.11 OTHER PROGRAMS

A number of stand-alone programs that have been developed during the project year are described herein. These programs constitute a healthy addition to the MIC's existing library of programs, and, in some cases, provide essential auxiliary services to MIC's operations.

4.11.1 WORD FREQUENCY COUNT FOR RETROSPECTIVE SEARCHES

A word frequency count was performed for each of the retrospective services: multidisciplinary, education and psychology. It gives the number of articles in the data base in which each searchable word appears. The sorted word files from the word generation step are merged. A PL/1 program (FREQC) counts the number of citations in which each word occurs. Another PL/1 program (FPRINT) prints the words with frequencies exceeding a certain number (an input option). Every time a new data set is added to the retrospective data base, the word file generated is passed through the program (FREQC) and then merged with the existing word frequency count tape. This, in turn, is processed by a COBOL program (ACCUM) to come up with the final word frequency count tape. Words with frequencies exceeding 100 are printed for all three retrospective services and words with frequencies exceeding 10,000 are also printed for the multidisciplinary retrospective service. They are an enormous help to the information specialists in the coding of retrospective profiles.

Figures 19 and 20 give a diagram of how word frequency lists are created and updated.

4.11.2 HIT FREQUENCY DISTRIBUTION PROGRAM

The hit frequency distribution (HFD) program is a PL/1 program that was written to provide information as to the distribution of the number of hits among MIC patrons. The hit notification printing program MICPRINT or MICNOTIF prints a list of patrons and the number of hits each one receives. HFD takes this information one step further and prints the number of users getting a certain number of hits. This gives the information specialists some idea as to the hit frequency distribution in each service. The program also prints a list of the patrons and the number of hits each one receives, in ascending order of hits to identify patrons who consistently receive a large number of hits or patrons who consistently receive no hits. In these cases, a review of the profile is called for and in current awareness services, a modification is generally made to the profile.

The program takes for input the cost file from the print program sorted into ascending order of hits. It is the last step in every search run. It runs in 38K of core and takes about 5 seconds to process 1700 patrons on an IBM 370/158 operating under OS/MFT with HASP.

122

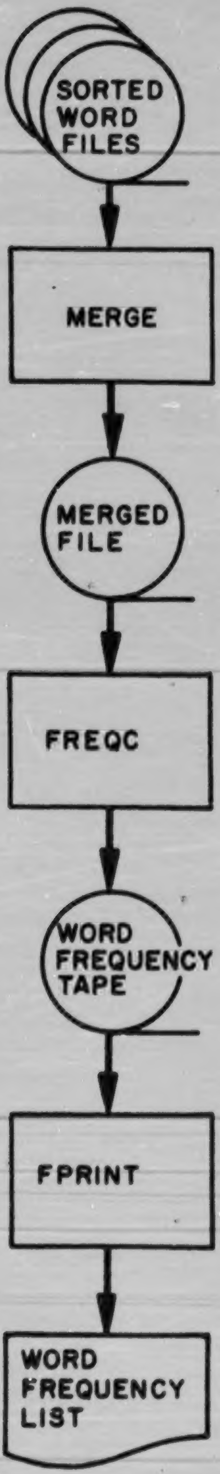


FIGURE 19. CREATION OF WORD FREQUENCY TAPE

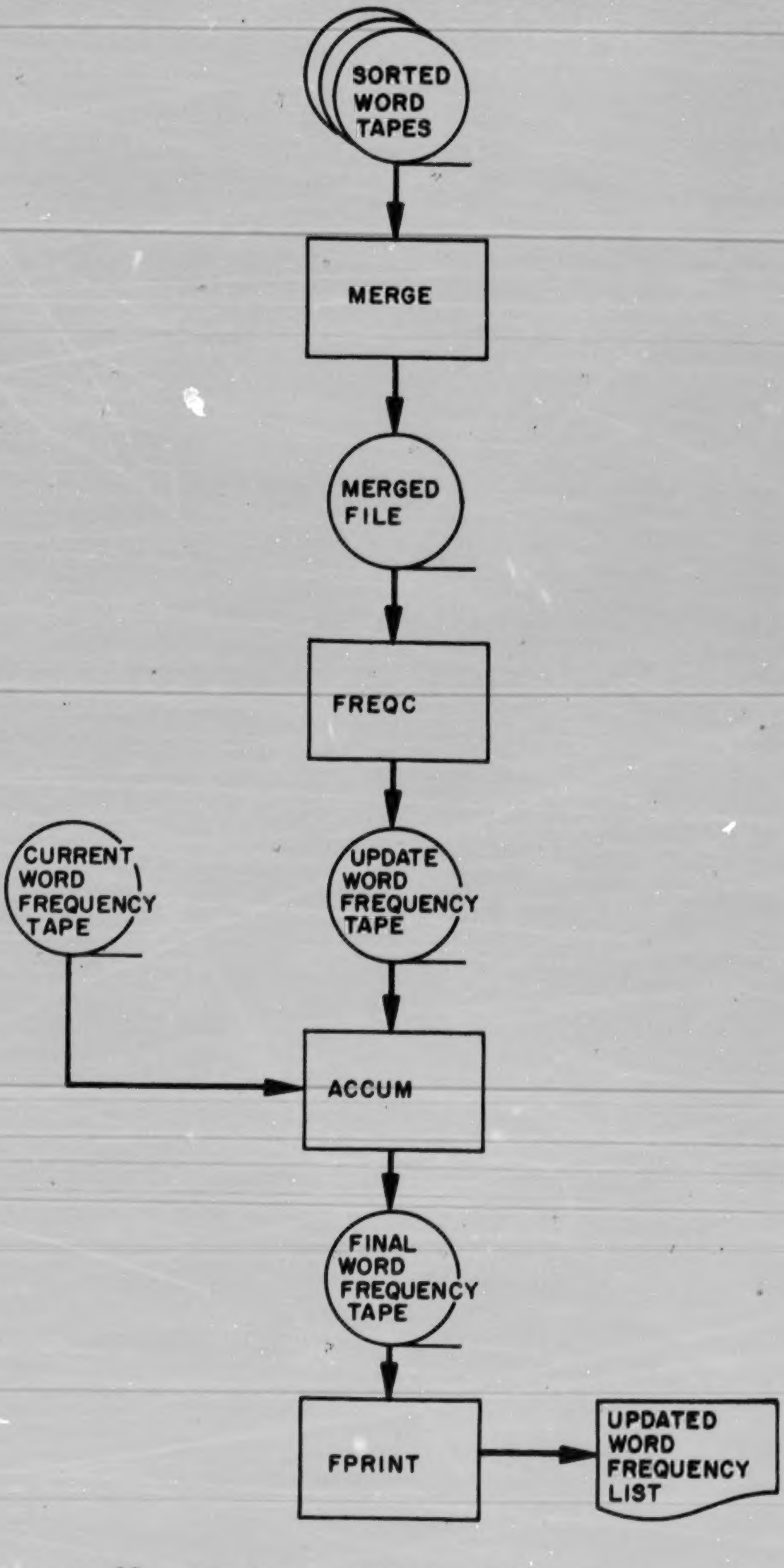

SORTED WORD TAPES
MERGE
MERGED FILE
FREQC
CURRENT WORD FREQUENCY TAPE
UPDATE WORD FREQUENCY TAPE
ACCUM
FINAL WORD FREQUENCY TAPE
FPRINT
UPDATED WORD FREQUENCY LIST

FIGURE 20. UPDATE OF WORD FREQUENCY TAPE

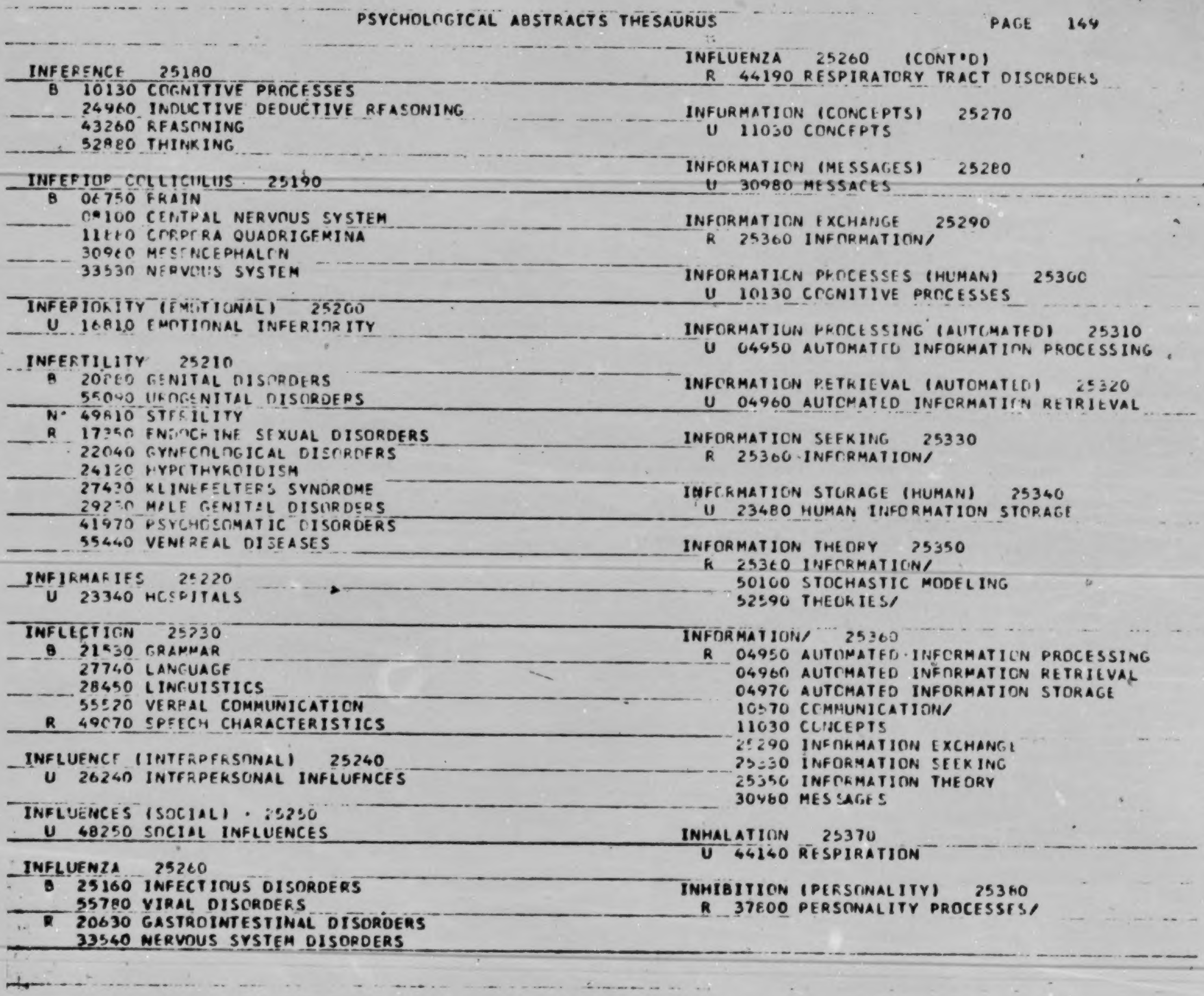
4.11.3 *PSYCHOLOGICAL ABSTRACTS THESAURUS PRINT PROGRAM*

A program that prints the Psychological Abstracts thesaurus in an easily readable form was written. It reads the thesaurus tape purchased from the American Psychological Association and formats the output. Figure 21 shows a sample output page. The program is written in PL/1, ran in 42K, and took 46 seconds CPU to print the entire PA thesaurus (21,666 records, 336 printed pages) on an IBM 370/158 operating under OS/MFT with HASP.

4.11.4 *THESAURUS ANALYSIS*

Because the PANDEX Thesaurus undergoes major revisions at regular intervals, words that were formerly searched as title words may become index words and vice versa. As discussed before, the two solutions to the problem were: (1) MIC could use each new version as it was released or (2) MIC could freeze the current version of the thesaurus.

The first solution has the advantage that new versions of the thesaurus contained fewer errors. However, it would require that all occurrences of the words affected in the current awareness profiles would have to be changed. These changes are not always simple. To aid in making such changes, programs were written to: (1) analyze the differences between two versions of the thesaurus (THESCHG), (2) locate occurrences of affected terms in profiles and generate profile updates to make the changes (PROFIE), (3) report on the usage of words in the profiles (PROWORD), and (4) maintain a master thesaurus with a history



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                    PSYCHOLOGICAL ABSTRACTS THESAURUS                    PAGE   149

INFERENCE   25180                             INFLUENZA   25260   (CONT'D)
  B  10130 COGNITIVE PROCESSES                  R  44190 RESPIRATORY TRACT DISORDERS
     24960 INDUCTIVE DEDUCTIVE REASONING
     43260 REASONING                          INFORMATION (CONCEPTS)   25270
     52880 THINKING                             U  11030 CONCEPTS

INFERIOR COLLICULUS   25190                   INFORMATION (MESSAGES)   25280
  B  06750 BRAIN                                U  30980 MESSAGES
     08100 CENTRAL NERVOUS SYSTEM
     11880 CORPORA QUADRIGEMINA               INFORMATION EXCHANGE   25290
     30960 MESENCEPHALON                        R  25360 INFORMATION/
     33530 NERVOUS SYSTEM
                                              INFORMATION PROCESSES (HUMAN)   25300
INFERIORITY (EMOTIONAL)   25200                 U  10130 COGNITIVE PROCESSES
  U  16810 EMOTIONAL INFERIORITY
                                              INFORMATION PROCESSING (AUTOMATED)   25310
INFERTILITY   25210                             U  04950 AUTOMATED INFORMATION PROCESSING
  B  20880 GENITAL DISORDERS
     55090 UROGENITAL DISORDERS               INFORMATION RETRIEVAL (AUTOMATED)   25320
  N* 49810 STERILITY                            U  04960 AUTOMATED INFORMATION RETRIEVAL
  R  17350 ENDOCRINE SEXUAL DISORDERS
     22040 GYNECOLOGICAL DISORDERS            INFORMATION SEEKING   25330
     24120 HYPOTHYROIDISM                       R  25360 INFORMATION/
     27430 KLINEFELTERS SYNDROME
     29230 MALE GENITAL DISORDERS             INFORMATION STORAGE (HUMAN)   25340
     41970 PSYCHOSOMATIC DISORDERS              U  23480 HUMAN INFORMATION STORAGE
     55440 VENEREAL DISEASES
                                              INFORMATION THEORY   25350
INFIRMARIES   25220                             R  25360 INFORMATION/
  U  23340 HOSPITALS                               50100 STOCHASTIC MODELING
                                                   52590 THEORIES/
INFLECTION   25230
  B  21530 GRAMMAR                            INFORMATION/   25360
     27740 LANGUAGE                             R  04950 AUTOMATED INFORMATION PROCESSING
     28450 LINGUISTICS                             04960 AUTOMATED INFORMATION RETRIEVAL
     55520 VERBAL COMMUNICATION                    04970 AUTOMATED INFORMATION STORAGE
  R  49070 SPEECH CHARACTERISTICS                  10570 COMMUNICATION/
                                                   11030 CONCEPTS
INFLUENCE (INTERPERSONAL)   25240                  25290 INFORMATION EXCHANGE
  U  26240 INTERPERSONAL INFLUENCES                25330 INFORMATION SEEKING
                                                   25350 INFORMATION THEORY
INFLUENCES (SOCIAL)   25250                        30980 MESSAGES
  U  48250 SOCIAL INFLUENCES
                                              INHALATION   25370
INFLUENZA   25260                               U  44140 RESPIRATION
  B  25160 INFECTIOUS DISORDERS
     55780 VIRAL DISORDERS                    INHIBITION (PERSONALITY)   25380
  R  20630 GASTROINTESTINAL DISORDERS           R  37800 PERSONALITY PROCESSES/
     33540 NERVOUS SYSTEM DISORDERS
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FIGURE 21. SAMPLE PAGE FROM PSYCHOLOGICAL ABSTRACTS THESAURUS

of the changes (THESMTR). Even with these programs, manual intervention was still required to resolve more complex transformations. The disadvantages of this approach were: (1) the need to change the existing profiles at regular intervals and (2) after the new files had been added to the retrospective system, it would be necessary to code the profile two or more ways.

The second solution--freeze the thesaurus--has the advantage that no profiles need to be modified and that no retrospective profiles need be coded in two ways. It has the disadvantage of perpetually using a thesaurus containing errors. A program (THESERR) was written to analyze the occurrence rate for known types of errors in the thesaurus. It was discovered that few of these had a serious effect on profiling and most could be handled in a profile.

The decision was therefore made to freeze the then current version of the thesaurus and to preprocess the PANDEX and NTIS tapes.

4.11.5 CURRENT PROGRAMS ORDERING INFORMATION

A new source for conference papers, Current Programs, was found and added to the multidisciplinary current awareness data base during the project year. The decision was made to again provide to patrons with the information on where to obtain copies of the papers. This could be done most conveniently by including this information with the first page service. The necessary information is available in the printed version of Current Programs.

Because the tape version of Current Programs comes from a different publisher than the printed version, it was decided to have a program that could generate the ordering information from the computer tape, in case the difference in delivery dates of the tape and paper versions was too great. The program reads the Current Programs tape in PANDEX format looking for the "common data" records which contain the information on how to order the papers or proceedings. An intermediate file into which the records are sorted into conference number order is generated by the program.

Any errors in the data base format or in the record content results in an error message being generated. The output format is very flexible and is designed to print the information in a format suitable for photocopying. It is a single column page but can be any length and any width up to the physical limit of the printer (132 characters). Printers that print up to 144 characters can be used without program modification. The program reads these parameters from a data card.

Given the conference number and the volume and issue of Current Programs in which the conference appears, it is possible to find the ordering information for any paper in either the printed Current Programs or the output of this program. This information is printed on each notification card.

During the third project year, MIC has had to use the program on occasion to generate ordering information.

4.11.6 DATA BASE QUALITY CONTROL

Variations and errors in the data base tapes provided by the publishers can be a major source of error in any information center operation. All MIC programs have been written to minimize the effects of such errors. A number of new features have been added to detect and document errors.

In addition, two programs were written specifically to analyze errors known to occur in the NTIS tapes. The first provides a cross reference listing between the document number (for example, AD number) and the physical position of the record on the tape. This is useful in locating problem citations in the first page document delivery service. The second program detects and documents the cases where items on the NTIS tapes supplied by Macmillan do not meet the specifications for the PANDEX format.

4.11.7 MIC USER DIRECTORY SUBSYSTEM

A user directory subsystem was designed. It furnishes a set of three reports that give information such as classification of users by service, type, and department, a tabulation of a number of unique center users over time, and a historic record of user activities indicating dates of joining and terminating MIC's services. Four programs were written to perform the various system functions. A COBOL program (CRETPROF) creates the initial MIC user directory master file on disk. The file is index sequentially organized to facilitate random update. A PL/1 program (DIRECTORY) is used to subsequently maintain the user directory with every production run statistics. Another PL/1 program (DIRLIST) is used to print out various status reports. Finally, a COBOL program (MICUSER) is used to screen, sort, and print the user classification report by service, type, and department.

A flowchart depicting the above system functions is shown in Figure 22.

4.12 UPDATED SEARCH SYSTEM FLOWCHARTS

Because of the changes described in this section, it became necessary to up-date several system flowcharts. The updated system flowcharts for Multidisciplinary Current Awareness Search System, Multidisciplinary Retrospective Search System, Education Current Awareness Search System, and Education Retrospective Search System are shown in Figures 23, 24, 25, and 26, respectively.

4.13 BRAILLE OUTPUT

MIC is currently investigating the feasibility of producing MIC output in computer-generated Braille. The hardware and software state-of-the-art seems to be adequate to produce usable Braille output.

MIC is currently working on software that would provide Braille notification cards in a format tailored to the needs of the Braille reader. The software would be written in a manner designed to facilitate experimentation with other formats or hardware devices.

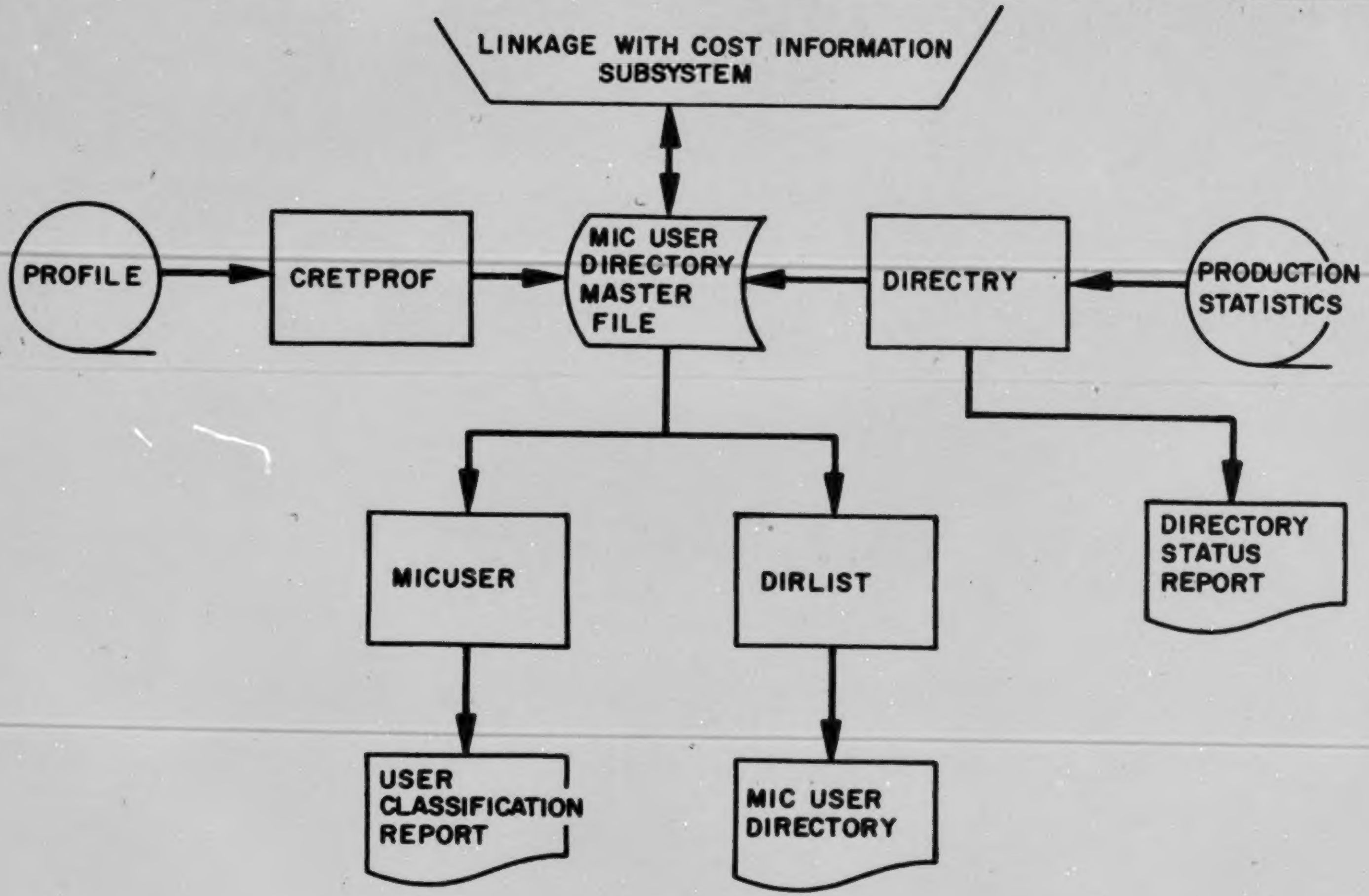

FIGURE 22. MIC USER DIRECTORY SYSTEM

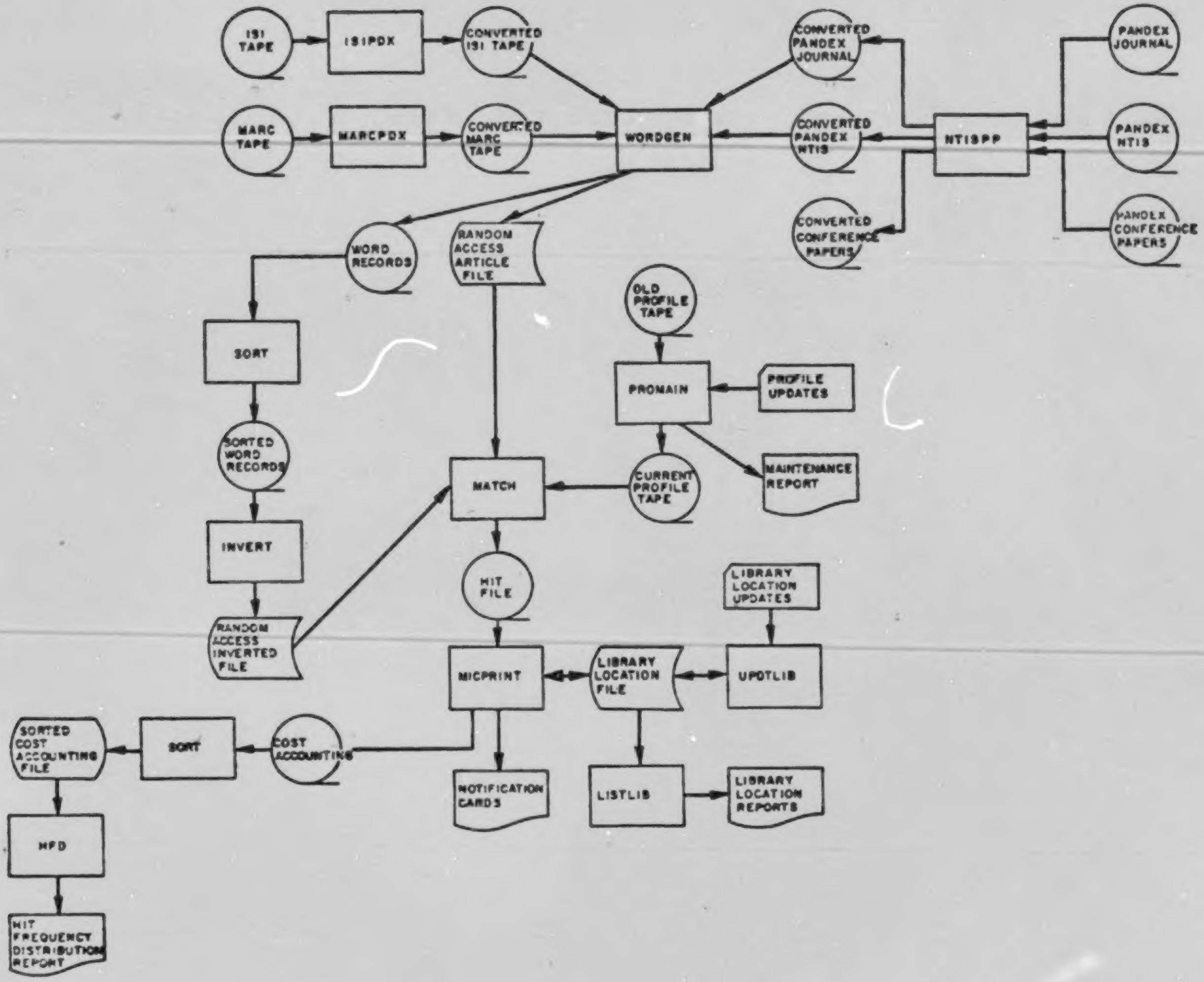

FIGURE 23. MULTIDISCIPLINARY CURRENT AWARENESS SEARCH SYSTEM

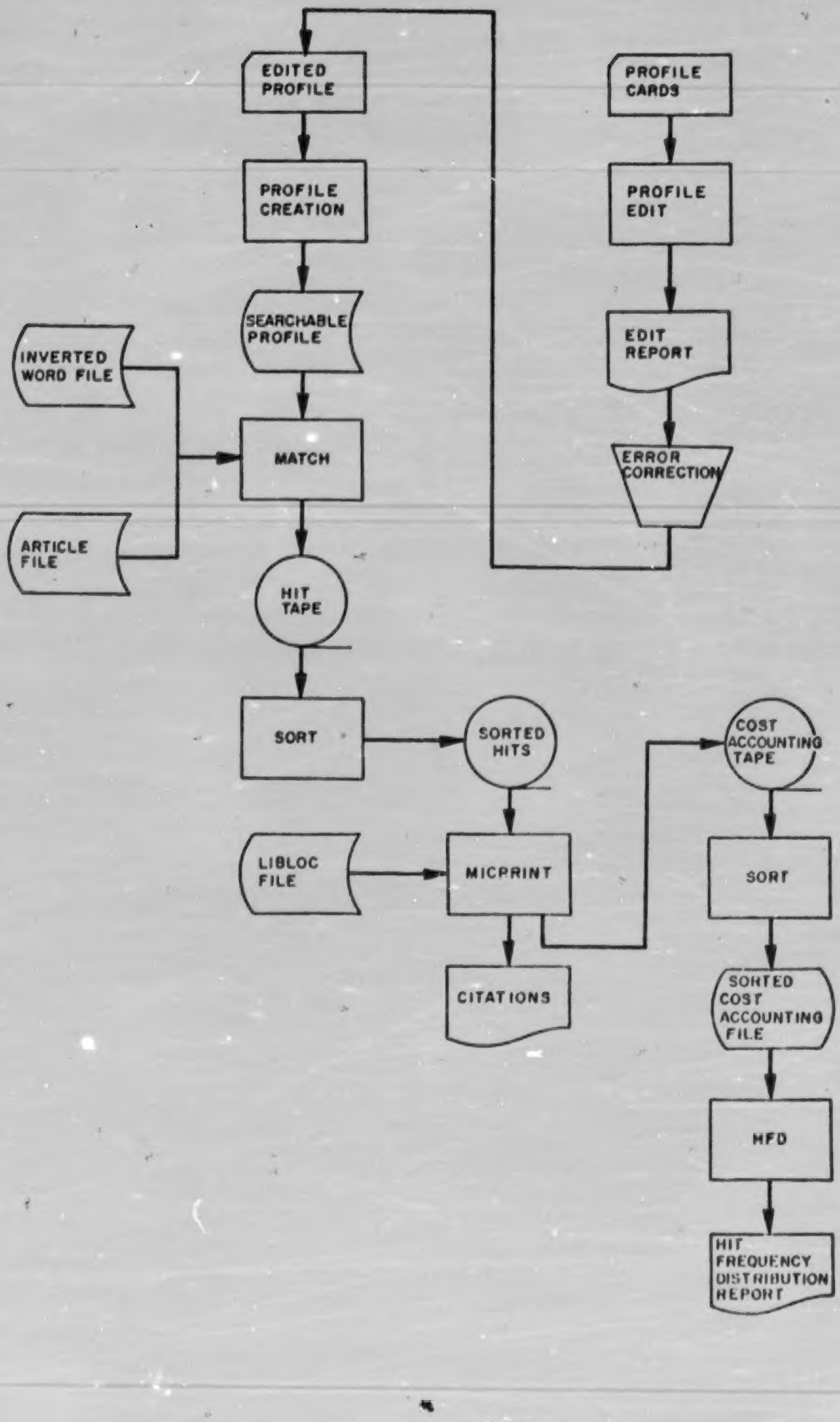

FIGURE 24. MULTIDISCIPLINARY RETROSPECTIVE SEARCH SYSTEM

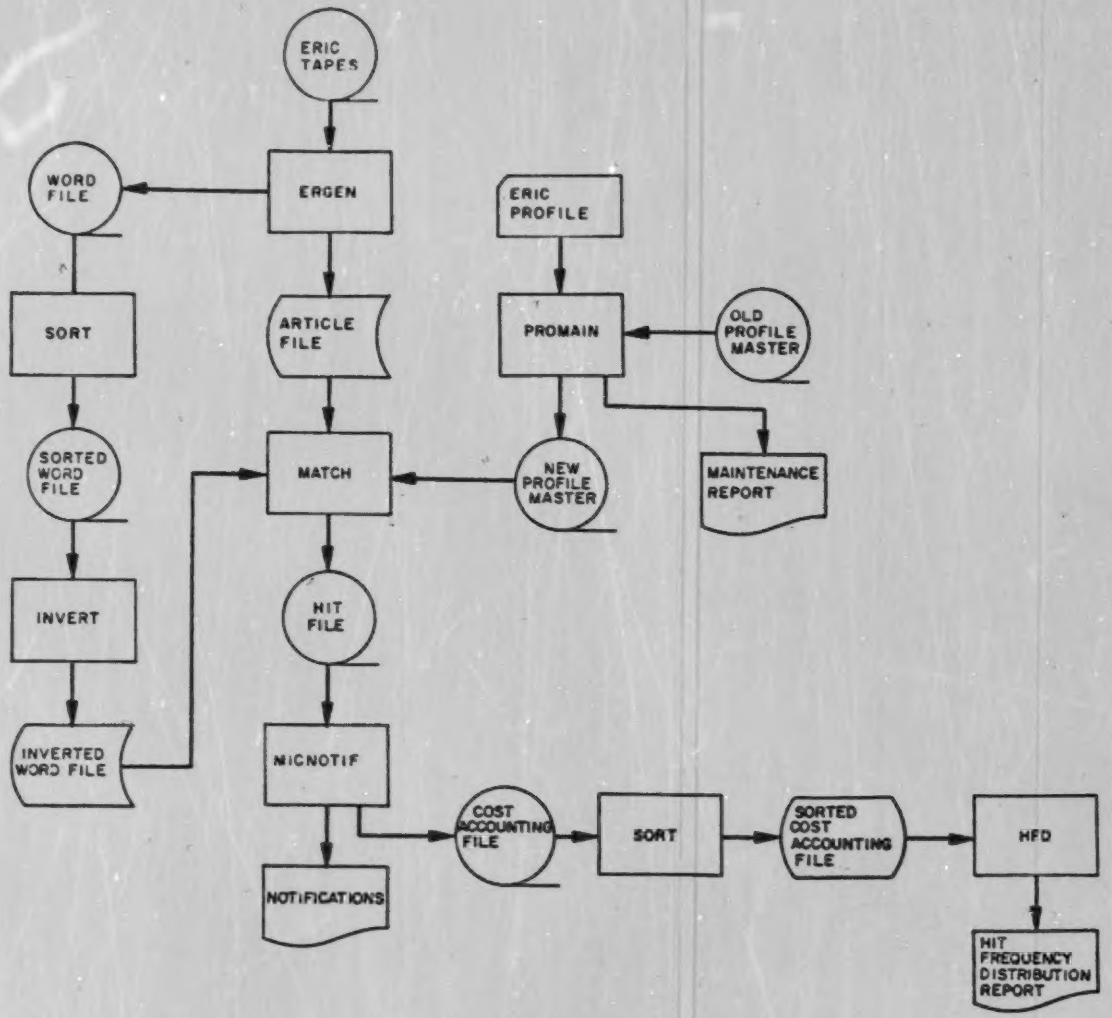

FIGURE 25. EDUCATION CURRENT AWARENESS SEARCH SYSTEM

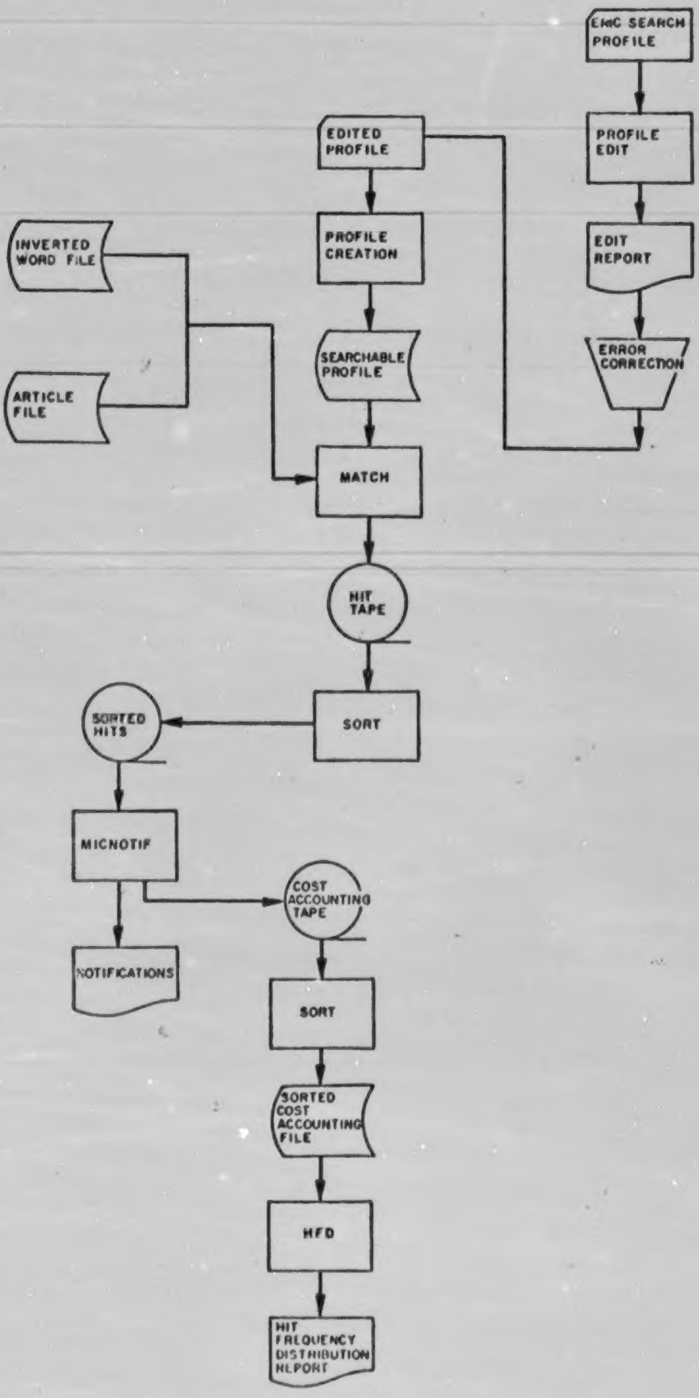

FIGURE 26. EDUCATION RETROSPECTIVE SEARCH SYSTEM

SECTION 5

OPERATIONS

The data bases selected are searched to provide eight MIC services. The tapes have to be ordered, checked in, reformatted, stored and retrieved from a tape library for production runs. Programs have to be submitted and the JCL (Job Control Language) deck updated, profile edit runs done, and production runs scheduled.

Then, the output from the services, more than 3.2 million notification cards in this reporting period, have to be sorted, checked, and mailed. These notifications yielded approximately 130,000 bibliographies for people on campus and at outside universities.

5.1 TAPES AND DISK PACKS

MIC's magnetic tape library has expanded continuously with the growth of MIC services. The approximately 888 tapes now maintained include approximately 300 tapes devoted to storing profiles, and citation and output files from MIC's search runs, 179 tapes in use by programmers, and 233 blank inventory tapes.

MIC receives ten data base tapes from several sources, as itemized below:

(1) Macmillan Information:
    PANDEX
    RIE (Research in Education)
    CIJE (Current Index to Journals in Education)
    NTIS (National Technical Information Service)
      Government Reports
    Bibliography of Agriculture
    Current Programs (conference papers)

139

(2) Institute for Scientific Information:
    ISI Source Index tapes
    SSCI (Social Science Citation Index)

(3) Chemical Abstracts:
    Chem Titles tapes

(4) Ohio College Library Center:
    MARC tapes.

In addition, MIC has 19 disk packs that are used to store the inverted files and the article files for the retrospective and current awareness services, the program library, and the LIBLOC (Library Location) file.

5.2 PROGRAMS AND PRODUCTION

The incoming tapes are inventoried. The ISI (both the Source Index and social sciences tapes) and MARC tapes are processed by the appropriate conversion program to convert them to a PANDEX format. The rest are preprocessed before they are searched.

In addition, programs are set up each week to edit the profiles and queries prior to the running of the search programs. Profile maintenance programs are run on a weekly basis to update the multidisciplinary current awareness profile tape, bi-weekly for social sciences profile tape and monthly for education and agriculture profile tapes.

Then, the production runs that generate the notification cards are set up and run. The MIC Multidisciplinary Current Awareness Service is run and mailed every week. Each weekly data base includes PANDEX, ISI Source Index, and MARC tapes; an NTIS tape is included every other week; the conference papers tape is run once a month. Social Sciences and Chemical Titles Current Awareness Services are run every two weeks. Education and Agricultural Current

Awareness searches are run once a month. The three retrospective searches are run every week.

Between February 1, 1973 and January 31, 1974, approximately 930 computer jobs were run. This number included data format conversions, profile editing and maintenance, retrospective and current awareness searches, library location maintenance and tape merges. (See Appendix E for the production run schedules.)

A printed listing of run statistics was produced during each run. Among the totals generated are total citation records run, total "hits" produced, total of profiles or queries for which no hits were produced, total number of notifications printed, and the total number of users included in the run, and statistics by data base classification. Both manual and computer-generated statistics were compiled.

In addition, the more than 3.2 million notification cards that resulted from the year's production runs were sorted into sets after every production run, screened, and mailed to the patrons who used the eight MIC services.

All the computer jobs were run at The University Systems Computer Center of The Ohio State University.

SECTION 6

RESEARCH

The main goal of MIC, as stated in the introduction to this report, is "to efficiently and effectively use machine-readable data bases to provide computer-based information services." Research helps provide a foundation for doing that.

During the project year, MIC did research on a system for data transmission network and on an evaluation of a machine-readable data file.

6.1 DATA TRANSMISSION

The feasibility of building a local computer network, in general, and a computer-based data transmission network for MIC, in particular, was investigated.

There are three computer centers at The Ohio State University. Included in these centers are several medium and large scale IBM 360/370 computers. In addition, dozens of small and medium scale non-IBM computers are available for use in many academic departments. Currently, these installations operate independently, mostly in batch modes. Although some installations have remote video and typewriter-like terminals for use in various on-line and time-sharing modes, interconnecting some or all of these installations to form a local computer network within the University has never been attempted.

In the first phase of the research, a system configuration study for interconnecting the IBM 370/165 at the Instruction and Research Computer Center and the PDP-10 and MICRO-1600 at the Department of Computer and Information Science was completed.[1,2] The hardware/firmware/software requirements for the proposed subnet were obtained.

The second phase of the research, which involves investigation of a data-ring subnet connecting various small scale computers with the PDP-10, is underway. The ring structure is attractive in interconnecting mini- and midi-computers because of its reliability, low initial cost and incremental expansion capability. Specifications for the ring interface hardware, the communication protocol, and a distributed data base will be obtained. It is hoped that an operational subnet can be built to explore the utilization of the large number of mini-computers that are available for use throughout the University. A preliminary report[3] has been issued.

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[1] H.H. Chuang and M.T. Liu, Interconnecting the PDP-10 and the MICRO-1600 computers, Unpublished report, Department of CIS, The Ohio State University, 1973.

[2] T. Wyrick and D.K. Hsiao, System configuration study on the interconnection of the IBM 370/165, DEC System-10 and MICRO 1600/21 computer systems, Technical report, Department of CIS, The Ohio State University, 1973, OSU-CISRC-TR-73-7.

[3] C.C. Reames and M.T. Liu, An investigation of data ring computer networks, Preliminary report, Department of CIS, The Ohio State University, 1973.

6.2 EVALUATION OF AN INTEGRATED SUBJECT FILE

A study to determine whether the Integrated Subject File (ISF) produced by the Chemical Abstracts Service (CAS) would prove useful as a data base for an automated retrieval system was undertaken. (The study was a part of a larger effort to be carried out principally by the Information Sciences group, IIT Research Institute.)

The ISF consists of all the data employed by CAS in the preparation of the printed Subject Indexes (Substance Index and Concepts Index). CAS emphasizes chemical substances in its indexes. Chemical substances are fully indexed using a controlled vocabulary which is consistently and accurately applied.

Retrieval of substances via the CAS indexes is straightforward. On the other hand, the treatment of concepts is paid less attention. Because of the variability of terminology in general use, the indexing of concepts yields a less certain result. It was therefore of interest to determine how well the indexes provided for concept data.

The OSU study was concerned with manual searching of the printed Subject Index to Chemical Abstracts (CASI).

The purpose of the work was to help determine the feasibility and practicality of using the ISF as a data base for a computer-based retrospective search service. To meet this aim, it was necessary to obtain data on manual searching of the CASI which may be used for comparison and contrast with data obtained from automated searching of the same questions against the same data base.

The principal conclusion drawn from this study was that CASI is heavily oriented to specific substances and that searches involving either classes of substances or concepts were more difficult to execute and were less likely to yield good results. In general, a searcher using CASI must be aware of these facts and therefore, exercise careful judgement in constructing a search profile. Also, it is noteworthy that while the part of the index entry called the text modification contains much conceptual data, the organization of the index makes this data nearly inaccessible, especially in manual searches. Facile retrieval using text modification data would require considerable reorganization of the data base.

Construction of search profiles (or search strategies) is a task which requires considerable knowledge of the indexing policies and procedures involved in the creation of a CASI. This is probably a more important factor than is subject knowledge in achieving good retrieval results. Searches involving specific substances require knowledge of the chemical nomenclature employed in CASI but are otherwise easy to conduct.

Searches involving either classes of substances or concepts were generally much more difficult to perform and were likely to yield poorer results than were searches involving specific substances, for a given expenditure of effort.

SECTION 7

MARKETING PROGRAMS AND STUDIES

The increase in the use of the MIC services was mainly the result of MIC becoming more firmly established in the operation of the OSU Libraries (patrons hear about MIC through the normal channels of information) and of an active advertising program by MIC on campus.

At the same time, MIC performed a study into how services are adopted by faculty members on the OSU campus.

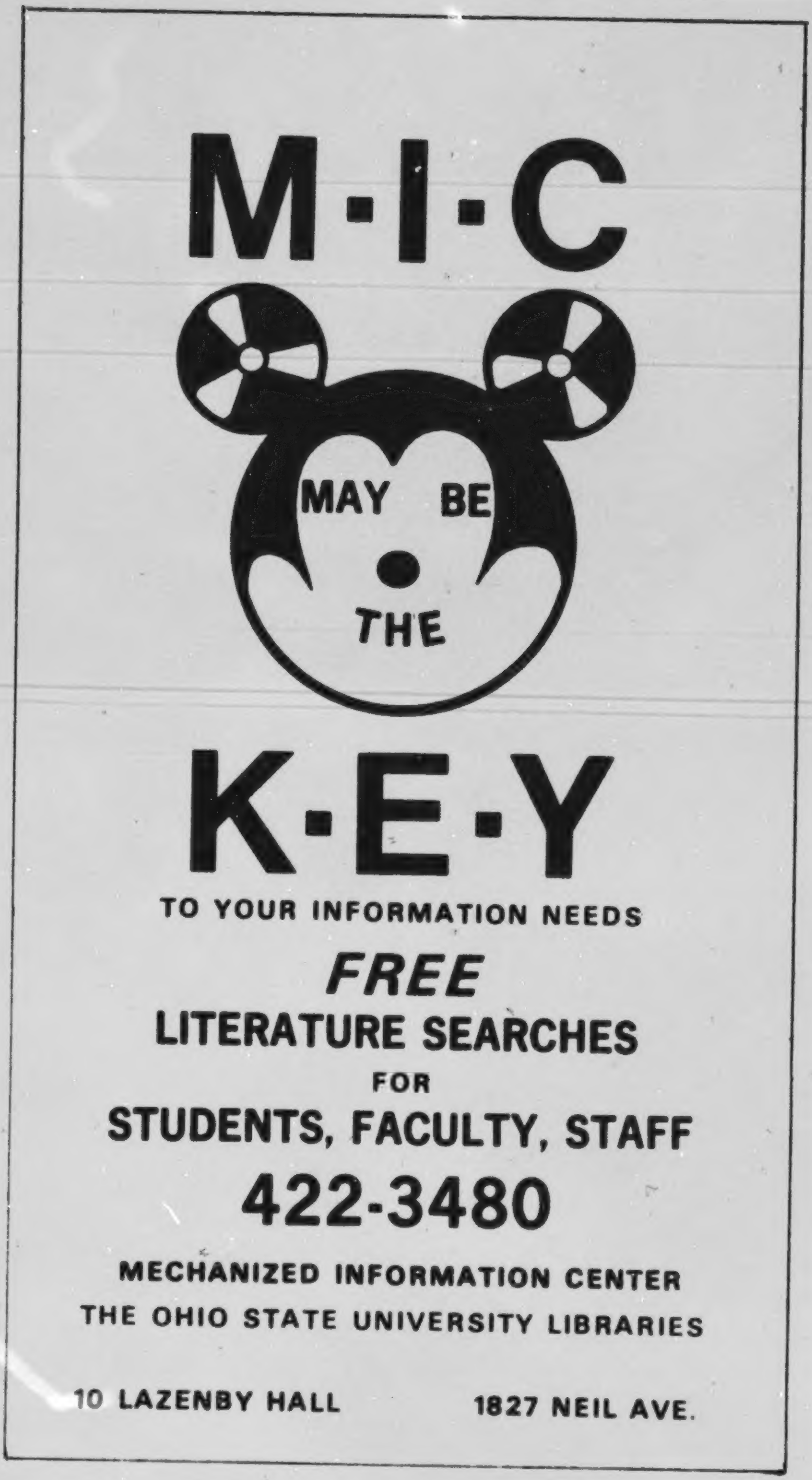
Thus, the problem of acceptance of MIC services was attacked at two levels: practical and theoretical.

The objective is to reach all people who might have an interest in MIC services.

7.1 ADVERTISING AND PUBLIC RELATIONS PROGRAM

When classes are in session, MIC advertises its services once each week in The Ohio State Daily Lantern, the campus newspaper, with a circulation that reaches 60,000 faculty, staff, and students at OSU.

In addition, a special flyer was designed and printed. (See Figure 27.) By the end of January, 6,000 copies of the Flyer



M·I·C

MAY BE THE

K·E·Y

TO YOUR INFORMATION NEEDS

FREE

LITERATURE SEARCHES

FOR

STUDENTS, FACULTY, STAFF

422-3480

MECHANIZED INFORMATION CENTER
THE OHIO STATE UNIVERSITY LIBRARIES

10 LAZENBY HALL 1827 NEIL AVE.

FIGURE 27. MIC FLYER

had been distributed to:

a) all dormitories on campus
b) two Student Union Buildings
c) 100 academic departments, mainly in the health sciences, hard sciences, engineering, and social sciences
d) graduate school office
e) library bulletin boards.

In addition, a brochure designed to reach the students, faculty and staff on the Columbus campus was written and printed. By the end of January, approximately 500 copies had been distributed to:

a) approximately 24 departmental libraries
b) the Research Consultant at the Main Library
c) Reference Librarians at the Main Library
d) Undergraduate Library
e) Circulation Department
f) MIC office
g) lobby of the Administration Building

Through the flyer, MIC hopes to reach the students directly. Through the brochure, MIC hopes to have information on MIC available at the areas where faculty and students come to the OSU reference librarians. The MIC services are another reference and research tool for librarians trying to help a patron.

MIC staff members also held meetings with the librarians in the Circulation Department, Reference Department, Acquisitions Department and in the Education and Agriculture Libraries to discuss mutual benefits and problems in working together. In some cases, these meetings became seminars in which the MIC people explained in detail the MIC services and what MIC was trying to do. In return, the people at the Library departments mentioned any problems, such as increased demand for other library services, that resulted from the introduction of computerized information services.

Additional publicity was received when the $156,500 grant from NSF for a fourth year of service was announced in January. MIC was contacted by the Columbus Dispatch, Columbus's largest circulation newspaper, by the Lantern, and by WOSU radio station. Articles appeared in both newspapers and a report was heard on WOSU. (See Figure 28, for a copy of the item that appeared in the Columbus Dispatch.)

7.2 MARKETING STUDIES

The original MIC multidisciplinary current awareness service had been promoted to the faculty by three different approaches:

(1) an opinion leadership program, which relied on word-of-mouth advertising generated by opinion leaders,

(2) a blitz program, which closely resembled the more typical marketing strategy of an intensive promotion of a particular product or service,

(3) a telephone solicitation program, which utilized the common practice of person-to-person telephone solicitation of potential users.

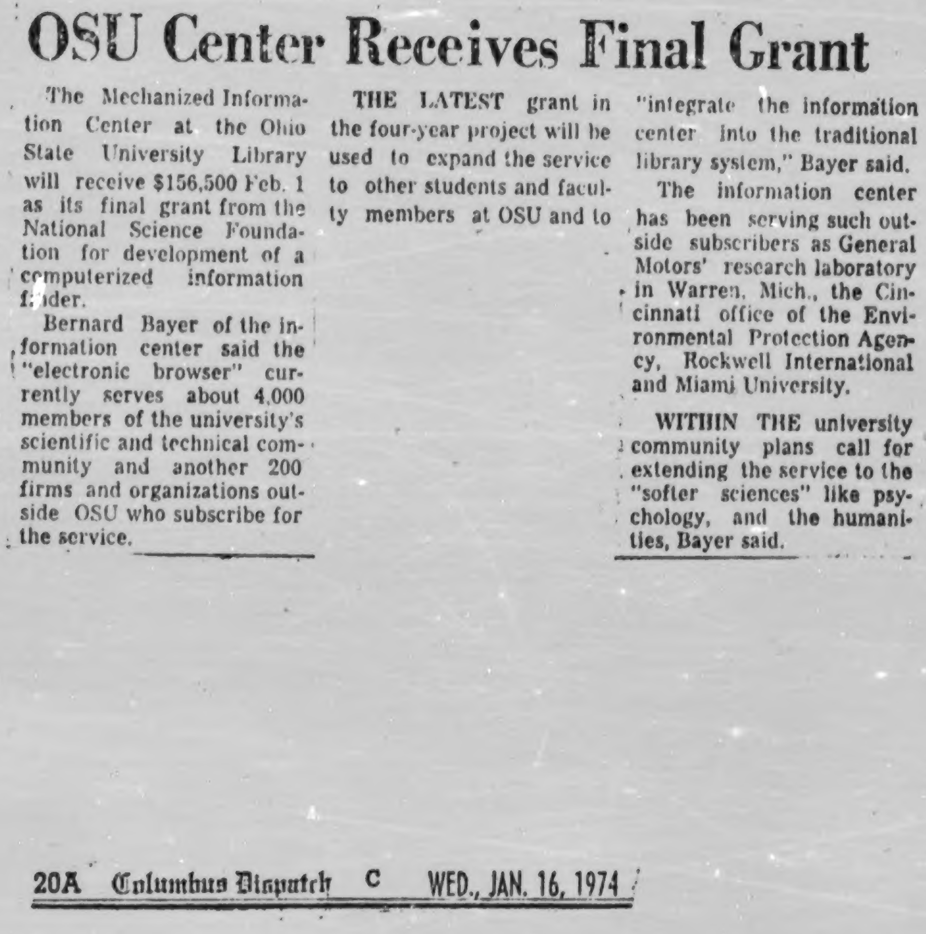
The results of using these approaches were detailed in the Second Annual Report of the Mechanized Information Center.

In conjunction with the marketing programs at MIC, a more elaborate study was undertaken to investigate the reactions of faculty members to a blitz-type promotional program. This was done in the third project year. The objectives of the new study were to:

(1) develop different promotional programs which would facilitate the acceptance of MIC's multidisciplinary current awareness service,

(2) obtain a profile of the adopters of the service,

(3) learn how the service diffused throughout its target faculty population.



OSU Center Receives Final Grant

The Mechanized Information Center at the Ohio State University Library will receive $156,500 Feb. 1 as its final grant from the National Science Foundation for development of a computerized information finder.

Bernard Bayer of the information center said the "electronic browser" currently serves about 4,000 members of the university's scientific and technical community and another 200 firms and organizations outside OSU who subscribe for the service.

THE LATEST grant in the four-year project will be used to expand the service to other students and faculty members at OSU and to "integrate the information center into the traditional library system," Bayer said.

The information center has been serving such outside subscribers as General Motors' research laboratory in Warren, Mich., the Cincinnati office of the Environmental Protection Agency, Rockwell International and Miami University.

WITHIN THE university community plans call for extending the service to the "softer sciences" like psychology, and the humanities, Bayer said.

20A Columbus Dispatch C WED., JAN. 16, 1974

FIGURE 28. ARTICLE FROM THE COLUMBUS DISPATCH

The study was conducted in such a way that MIC was able to collect data prior to, as well as after, the introduction of the MIC multidisciplinary current awareness service.

From a diffusion perspective, the current awareness service was viewed as an innovation with a high adoptive potential (HAP). It is: (1) of obvious practical value in the minds of most faculty members in the sciences, (2) easily communicated to other faculty members, (3) not a major departure from traditional information gathering activities, (4) not opposed by learned or professional societies, (5) not opposed by the majority of interested groups in the university community (for example, students, administrators), (6) not threatening to the faculty member's position or reputation, if adopted, (7) not threatening to, or in conflict with, established scholarly or economic interests, if adopted.

7.2.1 *STUDY DESIGN AND METHODOLOGY*

The original study was designed and implemented in the first two project years.

7.2.1.1 *Selection of Sample*

MIC determined that a computer-based literature service was most appropriate for 30 departments in the sciences and in engineering and for the College of Medicine. However, the College of Medicine was not included in the study because of its strong exposure to another comparable information service called MEDLARS. Eight of the 30 departments were eliminated for similar reasons. For example, the Chemistry Department had been using *Chemical Titles* searches.

For this study, 10 departments were selected, half of which included scientists and the other half engineers. In total, 272 faculty members were included in the sample, 167 from science departments and 105 from engineering departments.

7.2.1.2 *Questionnaire Design*

A questionnaire which elicited the following data was developed:

(1) Information sources used in obtaining literature for research and teaching. (Seven possible sources were listed with space allotted for listing other sources. Scale values ranged for each source from 1 to 5, where 1 = never useful and 5 = highly useful, with N = have never used.) This information was used to measure familiarity with computerized literature searches as well as reliance on sources of information outside the university.

(2) Rank order of information sources by value of information provided for both teaching and research.

(3) Faculty members' orientation in terms of local vs. cosmopolitan outlook. (Responses for each item were from SA (Strongly Agree) to SD (Strongly Disagree) using a five-point Likert-type configuration).

(4) Peer nominations for the following categories of colleagues at The Ohio State University:

    (a) those with whom the respondent most often discusses problems related to his research

    (b) those to whom the respondent would go to obtain information about a new research or teaching method

    (c) those the respondent considers personal friends

    (d) those whom the respondent considers to be very innovative, that is, very "up-to-date" in both what they do in their academic work and how they do it.

A faculty member was scored as receiving one peer nomination every time he was mentioned in any of the above four categories by a fellow faculty members.

152

(5) Orientation (proneness) toward change on the part of faculty members. (A 24-item Likert-type scale was developed specifically for purposes of this study and the population sampled. A faculty member's total score for this scale was interpreted as showing the degree of his proneness toward accepting change.)

(6) Demographic characteristics and professional background of respondents.

The questionnaire (see Annual Report of The Mechanized Information Center for a copy) was sent to the sample of 272 faculty members, prior to their exposure to literature and promotional material describing the computer-based literature service. Questionnaires were numbered so that respondents could be identified relative to adoption of the service and for follow-up purposes. Two follow-up letters were mailed at intervals of one and two weeks from the date of initial mailing to increase the response rate. Questionnaires were returned to the OSU Marketing Department and were not identified with MIC.

A second questionnaire was mailed six months later to the sample of 272 faculty members. This second questionnaire provided a means of determining whether or not those who had signed on for the service had actually adopted the service. Thus, only individuals who were putting the service to use (true adopters) were included in the analysis. Those who were routinely discarding the MIC notifications upon receipt were omitted. This second questionnaire also provided a means of obtaining demographic characteristics and professional background information of nonrespondents to the first questionnaire. This latter information was used to compare those who responded to our first questionnaire and those who did not. Four different variations of this questionnaire were developed and sent to the following four groups: (1) adopters of the service who had completed the first questionnaire, (2) non-adopters of the service who had completed the first questionnaire, (3) adopters of the service who had not completed the first questionnaire, and (4) non-adopters of the service who had not completed the first questionnaire.

It should be noted that the majority of the diffusion studies examine populations of adopters after they have been self-selected into that category. Thus, the possibility remains with ex post facto studies that recent adoption of an innovation affects responses to questionnaires designed to discern differences. In order to avoid any such contamination in this study, MIC administered the first questionnaire prior to making the innovation available to the prospective innovators.

7.2.1.3 *Respondents*

Of the 272 faculty members surveyed initially, 111 returned at least partially usable questionnaires. Of the 111, 44 eventually became users of the system. For the second questionnaire, which was far less threatening than the first, the response rate was 52%. Data from the later questionnaire showed, among other things, that non-respondents to the first questionnaire were not significantly different from respondents to the second questionnaire, in terms of demographic characteristics and professional backgrounds. In addition, three individuals who had signed-on to the service

154

had fallen below the operational definition based on usage that had been established for adoption. The three were dropped from the adopter category, leaving a total of 41 adopters.

These responses were analyzed in depth in the third project year.

7.2.2 *FINDINGS AND CONCLUSION*

The attempt to distinguish between classes of adopters (Pioneer, Early, and Late) and between adopters and non-adopters on the basis of their value orientations and professional backgrounds was relatively unsuccessful. Initially, MIC had hoped that the predictor variables would serve as useful surrogates for identification of those individuals most apt to adopt an innovative information service. The two best variables for discrimination seem to be prior knowledge of computerized literature services and positive predisposition toward information services. This result appears rather tautological. However, it indicates rather clearly that those who are aware of, and value, information services are most apt to avail themselves of the service when it is offered.

In considering the fundamental sameness between adopter classes, it is useful to consider the relative homogeneity among faculty members in the sciences and engineering. It is doubtful that professors in the humanities would respond similarly to the questionnaires used. But whether the different responses would subsequently be associated with differential times of adoption remains an unanswered empirical question.

An individual's centrality, as measured by peer nominations, seems to be a better predictor of adoption than the attitude, demographic, and professional variables. For all sociometric networks examined in this study, the adopter category mean nominations were greater than those of the non-adopter category, and four of the six means were significantly greater. Surprisingly, the smallest absolute difference between means was for the innovation network. From this it is apparent that subjects in this study were not able to determine who is or is not apt to innovate. They were able, however, to identify individuals who are central along other dimensions and these dimensions associated with adoption.

Also evident was a trend for Early adopters to be more central than either Pioneers or Late adopters. This finding, while not statistically significant, does suggest the marginality of Pioneers and Late adopters.

By examining an individual's centrality in the context of his peer's adoption tendencies, we were able to demonstrate the extent of group influence. Individuals in high adoption departments received more peer nominations than individuals in either the low or moderate adoption context departments.

The level of interaction and hence the flow of information relevant to adoption was no doubt greater in high adoption departments. Thus, in the final analysis, it would seem that the most important factor in determining the adoption or non-adoption of the innovative information service was, among the subjects, the existence of supportive reference groups. In general, a supportive reference group not only encourages behavior congruent with its norms but facilitates the exchange of information between members. Unfortunately, from our data there is no means of determining the relative supportiveness of the group _a priori_.

In sum, the research suggests that the adoption of an HAP innovation among professionals has very little to do with differential values or demographic characteristics but is, to a great extent, dependent on the structure and normative character of the group. These findings should, though, be re-examined for low adoptive potential (LAP) innovations where approval and communication may or may not be over-shadowed by the personal orientations and characteristics of the adopter.

SECTION 8
RELATIONSHIPS

Over the past year MIC has continued to develop its working relationships with other units within the OSU Libraries, with other centers in the business of furnishing information, and with outside universities wanting to use MIC services.

Staff members of MIC have held more than 500 conferences with other staff members of the OSU Libraries and more than 60 meetings with outside organizations.

8.1 RELATIONSHIPS WITHIN THE LIBRARY

In the fourth project year, plans for the full integration of MIC into the library system will be made. This fits in with the general philosophy of the University Libraries in that its concern is information, and whatever form this information takes--print, photographic film, microfiche, computer tape--is irrelevant. What is relevant is that there be easy access to the information. And, this is what MIC is trying to provide. (MIC is administratively part of Public Services of the OSU Libraries. See Figure 1.)

Good working relationships are being built within the Libraries. MIC has conducted a number of formal and informal seminars for librarians at the various department libraries. For example, MIC has trained the reference librarians in the Education Library to be information specialists. MIC will continue to offer these seminars as a means of acquainting librarians with the search services and of integrating MIC's operation with the existing system. More working arrangements will be implemented in the next reporting year.

The use of in-service seminars is predicated on the assumption that, in some cases, profiles can be written by department librarians for patrons who were regularly served by the library. Profiles are now constructed by reference librarians in the Education Library and sent to MIC for processing.

MIC hopes to have similar arrangements with the other departmental libraries at OSU. This approach significantly increases the number of patrons for whom MIC can process searches. Also having the reference librarians work as information specialists hastens the eventual integration of MIC into the library.

However, the central staff of information specialists at MIC will continue to have the primary responsibility for handling computer-based information services within the library. The MIC information specialists will be able to handle all computer-based services, will continue to do the majority of the profiling within the OSU system, will coordinate services for outside patrons, will continue to provide other reference services, and will continue to be the main resource people for other reference librarians within the OSU system.

8.2 RELATIONSHIPS WITH OTHER UNIVERSITIES AND ORGANIZATIONS

During the third project year, MIC provided search services to Wright State University, General Motors Research Laboratories, Oberlin College, Ohio Youth Commission, National Environmental Research Center, Cleveland State University, Kent State University, Rockwell International, Sinclair Community College, Nelsonville State Hospital, Kalamazoo Spice Extraction Company, and other outside people and organizations.

Through the Ohio College Library Center (OCLC), MIC will actively contact the OCLC member libraries to explain MIC services and how the services can help them. (OCLC is located on the Ohio State University campus.) MIC has formed a close working relationship with OCLC, which is a consortium of libraries in Ohio and in other states. OCLC provides MIC with copies of the MARC tapes that OCLC is using for on-line cataloging. This enables MIC to include current monographs in its multidisciplinary and social sciences data bases.

The manner in which these services are offered to the larger outside libraries will be similar to the manner in which MIC and Wright State have worked together. In the larger schools, like Wright State, search services will be coordinated by MIC through the librarians at the schools. MIC is able to provide in-depth training seminars for the librarians. The librarians are then available to patrons at their campus and can more effectively construct and modify search profiles. Additionally, all searches for a given location are sent to and coordinated through a central point. At smaller schools, the faculty member will be able to contact the MIC information specialists directly. This second method will be used when there is not a sufficiently large potential patron population.

8.3 RELATIONSHIPS WITH OTHER CENTERS

MIC continues to interact with other similar information centers. Staff members from MIC have met with personnel from other centers. These meetings have served to acquaint MIC's personnel with the operation of the other centers and also enable MIC to explore possible resource sharing. (See Appendix F for complete listing of such meetings.)

In addition, the Association of Scientific Information Dissemination Centers (ASIDIC) semi-annual meetings allow MIC's personnel to learn more about what other centers are doing and keep abreast of developments in the field.

MIC has developed, and will continue to develop, original software packages and to modify existing software to handle machine-readable data bases and make the software available to other university-based centers. It is compatible with most larger IBM 360 and IBM 370 computers.

MIC anticipates even greater interaction with other centers during the coming year, due to enlargement of its own activities and addition of new data bases.

APPENDIX B

INFORMATION SHEETS
ON MIC INFORMATION SERVICES

THE MECHANIZED INFORMATION CENTER - THE OSU LIBRARIES

MULTIDISCIPLINARY (MDS) CURRENT AWARENESS SEARCH SERVICE

The MDS Current Awareness Search Service covers current scientific and technical literature--articles, reports, conference papers, and books--in fields such as physical sciences, engineering, biological sciences, and health sciences.

Specific Fields covered by MDS Current Awareness

Aeronautics, Animal Sciences, Astronomy, Astrophysics, Biochemistry, Biology, Chemistry, Civil Engineering, Clinical Medicine, Electrical Engineering, Electronics, Energy Conversion, Experimental Medicine, General Engineering, Geoscience, Industrial Engineering, Materials, Mathematics, Mechanical Engineering, Meteorology, Nuclear Science, Oceanography, Pharmacology, Physics, and other multidisciplinary fields in the sciences and engineering.

Material Searched

Titles, authors, and appended descriptor terms of: (1) articles and technical notes from the current issues of 3,400 journals, (2) all the unclassified government reports available from the National Technical Information Service, (3) books cataloged by the Library of Congress, and (4) papers presented at future, current, and past technical conferences.

Approximately, 10,000 new items are searched each week from these sources. In one year, the total is more than half-a-million bibliographic citations.

Sources of Material

(1) for articles: Pandex Current Index to Scientific and Technical Literature, from Macmillan Information, a division of Macmillan Publishing Company, and Source tapes from the Institute for Scientific Information.
(2) for government reports: National Technical Information Service, U. S. Department of Commerce.
(3) for books: Library of Congress
(4) for conference papers: World Meetings Information Center, Inc.

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes:

(1) title
(2) author

(3) volume, issue number, and page for articles; price, publication date, and number of pages for government reports; publication data and number of pages for books; unique identification number for conferences.

(5) location of the library on campus that has the journal in question

Notes

Weekly mailing
Thesaurus needed to develop interest profiles

MECHANIZED INFORMATION CENTER - THE OSU LIBRARIES

EDUCATION CURRENT AWARENESS

The Education Current Awareness Service covers the field of education and educational psychology. It searches the current issues of 530 journals and research reports that are selected by the Educational Resources Information Center (ERIC) Clearinghouses.

Material Searched

The data base includes both Current Index to Journals in Education (CIJE) and Research in Education (RIE). Each monthly CIJE tape contains approximately 1,500 citations and each monthly RIE tape contains approximately 1,000 citations. RIE includes books and government documents. Terms in titles and ERIC descriptors can be searched.

Source of Material

Office of Education, U. S. Department of Health, Education, and Welfare, through Macmillan Information, Inc.

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes:

(1) author
(2) title
(3) name of journal, volume, issue number, page number, for CIJE documents
(4) four lines of descriptors for RIE documents; two lines of descriptors for CIJE documents
(5) EJ number for CIJE citation; ED number for RIE citations.

Notes

Monthly mailings
ERIC Thesaurus used for profiles

SOCIAL SCIENCES INFORMATION SERVICE (SSIS)

The Social Sciences Information Service is a current awareness service in fields that are grouped under social science. SSIS searches articles from current issues of journals and magazines and book titles.

Specific Fields Covered by SSIS

Anthropology, Archaeology, Area Studies, Business and Finance, Clinical Psychology, Communication, Computer Applications and Cybernetics, Criminology, Demography, Economics, Education, Environment, Ethnic Studies, Geography, Health and Rehabilitation, History, Human Development, Humanities, Industrial Psychology, Information and Library Science, International Relations, Law, Linguistics, Management Science, Operations Research, Philosophy, Political Science, Psychiatry, Psychology, Public Administration, Public Health, Social Issues, Social Work, Sociology, Statistics, Technology, Transportations, and Urban Studies.

Material Searched

Titles and authors of (1) all articles and technical notes from the current issues of 962 journals specifically in fields outlined above, (2) selected articles from 1,000 other journals, and (3) books cataloged by the Library of Congress.

Approximately 4,800 items are searched every two weeks from these sources. In one year, the total is 125,000 bibliographic citations.

Sources of Material

(1) for articles: Institute for Scientific Information
(2) for books: Library of Congress

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes:
(1) title
(2) author
(3) name of journal or publisher of the book
(4) volume, issue number, and page for articles; publication data and number of pages for books
(5) location of the library on campus that has the journal in question

Notes: Bi-weekly mailings
Thesaurus not needed to develop interest profiles

MECHANIZED INFORMATION CENTER - THE OSU LIBRARIES

CHEMICAL TITLES CURRENT AWARENESS

The Chemical Titles Current Awareness Service covers journal literature in chemistry and chemical engineering. It is an express service that gives the titles of papers published in journals before an abstract appears in Chemical Abstracts.

Material Searched

Titles and authors of articles appearing in the current issues of 730 journals in the fields of chemistry and chemical engineering.

Approximately 5,800 citations are searched every two weeks, for a total of 150,000 citations a year.

Source of Material

Chemical Abstracts Service, The American Chemical Society

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes:

(1) title
(2) author
(3) name of journal
(4) volume, issue number, and page number

Notes

Bi-weekly mailing
Use Chem Titles vocabulary when profiling.

AGRICULTURE CURRENT AWARENESS SERVICE

The Agriculture (Agro) Current Awareness service covers articles from journals and reports published by the U. S. Department of Agriculture and the State Agricultural stations and services, in the fields of agriculture and allied sciences.

Specific Fields Covered by Agro

Agricultural Economics, Agricultural Administration and Management, Land Economics, Legislation, Consumer Protection, Human Nutrition, Home Economics, Dairy Products, Livestock Products, Poultry Products, Crops, Horticulture, Animal Husbandry, Infectious and Parasitic Diseases, Forestry Management, Silviculture, Plant Taxonomy, Plant Ecology, Plant Morphology, Plant Genetics, Plant Physiology, Herbicides, Insect Pests and Controls, Soil Science, Water Resources and Management.

Material Searched

Titles and authors of articles and reports received by the National Agricultural Library and Indexed for the Bibliography of Agriculture.

Approximately 10,000 citations are searched each month.

Source of Material

National Agricultural Library, U. S. Department of Agriculture, through Macmillan Information, Inc.

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes:
(1) title
(2) author
(3) name of journal or government report number
(4) volume, issue number, and page for articles; publication date, and number of pages for government reports.

Notes

Monthly mailing
Thesaurus not used

168

MECHANIZED INFORMATION CENTER - THE OSU LIBRARIES

MULTIDISCIPLINARY (MDS) RETROSPECTIVE SEARCH

The MDS Retrospective Search Service searches five and one half years of technical literature in the physical sciences, engineering, biological sciences, and health sciences. The data base covers the period of 1968 through June 1973, and includes 1.75 million references to journal articles, government reports, and books.

Specific Fields Covered by MDS Current Awareness

Aeronautics, Animal Sciences, Astronomy, Astrophysics, Biochemistry, Biology, Chemistry, Civil Engineering, Clinical Medicine, Electrical Engineering, Electronics, Energy Conversion, Experimental Medicine, General Engineering, Geoscience, Industrial Engineering, Materials, Mathematics, Mechanical Engineering, Meteorology, Nuclear Science, Oceanography, Pharmacology, Physics, and other multidisciplinary fields in the sciences and engineering.

Material Searched

Titles, authors, and appended descriptor terms, of: (1) articles and technical notes from past issues of 3,400 journals, (2) unclassified government reports available from the National Technical Information Service, and (3) books cataloged by the Library of Congress for 1971-June, 1973, and (4) papers presented at technical conferences in 1971-June, 1973.

Approximately 1.75 million items are searched.

Sources of Material

(1) for articles: Pandex Current Index to Scientific and Technical Literature from Macmillan Information, a division of Macmillan Publishing Company, and Source tapes from the Institute for Scientific Information.
(2) for government reports: National Technical Information Service, U.S. Department of Commerce.
(3) for books: Library of Congress.
(4) for conference papers: World Meetings Information Center, Inc..

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

169

Information includes:

(1) title
(2) author
(3) name of journal, the government report number, the book publisher, or the name of conference
(4) volume, issue number, and page for articles; price, publication date, and number of pages for government reports; publication data and number of pages for books
(5) location of the library on campus that has the journal in question

Notes

One mailing (searches are run weekly)
Thesaurus needed to develop interest profiles

EDUCATION RETROSPECTIVE SEARCH SERVICE

The Education Retrospective Search Service searches data in the field of education and educational psychology selected by Educational Resources Information Center (ERIC) Clearinghouses.

Material Searched

Research in Education (RIE)--reports of research projects in education (November 1966 through June 1973). Books and government documents are included. Current Index to Journals in Education (CIJE) -- articles from journals (January 1969 through June 1973).

These two sources yield a total of 135,000 documents. Terms in titles, authors, identifiers, and ERIC descriptors can be searched.

Source of Material

Office of Education, U.S. Department of Health, Education, and Welfare, through Macmillan Information, Inc.

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes:

(1) author
(2) title
(3) name of journal, volume, issue number, page number, for CIJE documents
(4) four lines of descriptors for RIE documents; two lines of descriptors for CIJE documents
(5) EJ nember for CIJE citation; ED number for RIE citation

Notes

One mailing (Searches are run each week)
ERIC Thesaurus used for profiles

MECHANIZED INFORMATION CENTER - THE OSU LIBRARIES

PSYCHOLOGY RETROSPECTIVE SERVICE

The Psychology Retrospective Service searches seven years of literature in psychology. Psychological Abstracts from 1967 to 1973 is the data base which is searched in this service.

Specific Fields Covered by Psychology Retrospective Service

General Psychology, Psychometrics and Statistics, Perceptual and Motor Performance, Cognitive Processes and Motivation, Neurology and Physiology, Psychopharmacology and Physiological Intervention, Infrahuman Psychology, Cultural Influences and Social Issues, Social Behavior and Interpersonal Processes, Communication and Language, Personality, Professional Personnel, Physical and Psychological Disorders, Treatment and Prevention, Educational Psychology, Applied Psychology.

Material Searched

Titles, authors, subject terms of publications which have been indexed in Psychological Abstracts. Publications indexed in Psychological Abstracts include books, textbooks, book chapters, journal articles, technical reports, conference proceedings, motion pictures, audio tapes, and dissertations.

Approximately 140,000 references are included.

Source Material

American Psychological Association

Output

Complete bibliographic citations, printed one to a card, for each relevant item selected by the system.

Information includes;

(1) title
(2) author
(3) journal title, book imprint, book title, Dissertation Abstracts International citation, conference name
(4) year, volume, issue number, pages for journal articles; place, publisher, and date for books; author and title of the book for book chapters;
(5) Psychological Abstracts reference for the location of the abstract.

Notes

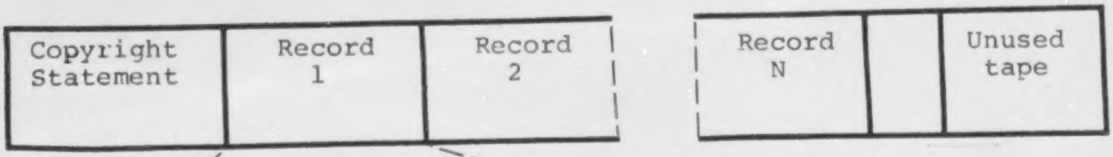
Searches are run on Thursdays with the citation cards available the following Thursday.

The Psychological Abstracts Thesaurus is used to develop the searches.

APPENDIX C

PSYCHOLOGICAL ABSTRACTS RECORD FORMAT

Data Record Description



FIXED LENGTH FIELDS, RIGHT JUSTIFIED

Block Descriptor Word	Record Descriptor Word	Generation Code	Year	Volume Number	Issue Number	Abstract Number	Type of Publication	Journal title - CODEN	Language of Publication	Availability
Hexadecimal, machine generated		1-2	3-6	7-8	9-10	11-15	16-17	18-23	24-27	28-31

FIXED LENGTH FIELDS, RIGHT JUSTIFIED

Directory Fields[2]										
1	2	3	4	5	6	7	8	9	10	11
32-35	36-39	40-43	44-47	48-51	52-55	56-59	60-63	64-67	68-71	72-75

FIXED LENGTH FIELDS, RIGHT JUSTIFIED

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[2] See catalog of fields and positions for description of variable fields.

Number of Classification Codes	Class Code 1	Class Code 2	Class Code 3	Class Code 4	Number of Subject index codes	Subject Code 1	Length of Subject term	Subject Term 1	Additional Subject Terms and Codes
76	77-78	79-80	81-82	83-84	85-86	87-91	92-93	94-Variable	

FIXED AND VARIABLE FIELDS

Author 1	Author 2	Author 3	Author 4	Affiliation of First Author	Title or Translated Title	Source Document Title or Publisher
Variable	Variable	Variable	Variable	Variable	Variable	Variable

VARIABLE FIELDS, LEFT JUSTIFIED

Source Document Description	Abstract Text	Abstractor's Name	Subject Index Phrase
Variable	Variable	Variable	Variable

VARIABLE FIELDS, LEFT JUSTIFIED

Catalog of Fields

Fixed Length Fields	Position	Type
Generation code	1-2	Alph
Year of publication in *PA*	3-6	Numeric
PA volume number	7-8	Numeric
PA issue number	9-10	A/N
Abstract number	11-15	Numeric
Type of publication	16-17	A/N
Journal title-coden	18-23	A/N
Language of publication	24-27	Alph
Availability	28-31	Alph
Directory for variable fields	32-75	Numeric*
Numer of classification codes	76	Numeric
Classification code 1	77-78	Numeric
Classification code 2	79-80	Numeric[1]
Classification code 3	81-82	Numeric[1]
Classification code 4	83-84	Numeric[1]
Number of subject index codes	85-86	Numeric*
Subject code #1	87-91	Numeric
Length of subject term	92-93	Numeric*

Variable Number of Fixed Length Fields	Type
Subject index code(s)	Numeric
Length of subject-terms	Numeric

Variable Length Fields

- Subject term
- Authors
- Affiliation of first author
- Title or translated title
- Source document title
- Source document description
- Abstract text
- Abstractor's name
- Subject index phrase

Fields are all Alphanumeric

---

*Leading digits are space filled.

[1] Space filled if missing data.

Code Key for Type of Publication

01	Book
02	Textbook
03	Book, Bibliography
04	Book, Readings
05	Book, Chapter
06	Book, Edited
07	Book, Translation
10	Journal article
11	Journal article, Review
12	Journal article, Translation
13	Journal article, Bibliography
20	Technical Report
23	Technical Report, Bibliography
24	Technical Report, U.S. Government Supported
30	Separate
31	Separate, Edited
32	Separate, Chapter
40	Audio Tapes
50	Motion Pictures

Code Key for Language of Publication

ALBA = Albanian
ARAB = Arabic
BELG = Belgian
BULG = Bulgarian
CHIN = Chinese
CZEC = Czech
DANH = Danish
DUTH = Dutch
ENGH = English
FINN = Finnish
FREN = French
GEOR = Georgian
GERM = German
GREK = Greek
HEBR = Hebrew
HUNG = Hungarian
IRAN = Iranian
ITAL = Italian
JAPN = Japanese
NORG = Norwegian
POLH = Polish
PORT = Portuguese
ROMN = Romanian
RUSS = Russian
SLOE = Slovene
SLOK = Slovak
SPAN = Spanish
SWED = Swedish
TURK = Turkish
UKRN = Ukrainian

Directory Fields

1. Location of first author
2. Location of second author
3. Location of third author
4. Location of fourth author
5. Location of affiliation of first author
6. Location of title or translated title
7. Location of source document title
8. Location of source document description
9. Location of abstract text
10. Location of abstractor's name
11. Location of subject index phrase

Fields are numeric with leading digits space filled

178

APPENDIX D

PROCEDURE

FOR CHANGING MOUNTED DISKS

CHANGING MOUNTED DISKS FROM WITHIN A JOB

This procedure is designed to allow a normal job running under OS/370 to request the operator to mount certain disk packs that it needs. It should be used by jobs which require a total number of disks greater than the number of disk drives available for such devices. Of course no single step within the job can require more disks than the number of drives available. This procedure should not result in other jobs within the system requesting SCRTCH disks or their ABENDS.

In order for this procedure to work correctly and efficiently, one partition or initiator (in addition to the one in which the program is running) must be free to allow processing of the mount commands. Such a partition can be made available by resetting one so that it will select a job CLASS which is not in the job stream.

When running with the MIC jobs J503P031 and J503P041, three drives will be required. One will be required throughout the job (MICDAL); the others will be changed on request and released when no longer needed.

PROCEDURE

(1) If the job is an MIC (account 503) job, mount disk MICDA1 by the conventional procedures before starting the job.

(2) Start the job.

(3) When the special MIC mount message (MIC001E) appears, mount the requested disks using standard OS mounting procedures (see below). A request for "***ANY DISKS***" indicates the job no longer needs the drives which have been used for the dynamic disk mounting. OS Mount Procedure Summary:

    (a) VARY the unit(s) offline.
    (b) START X.
    (c) When the computer indicates the units are offline, physically mount the disks on the appropriate drives.
    (d) Issue an OS MOUNT command for the volumes. (Do NOT try to mount the packs by varying the unit online without the MOUNT command).
    (e) START X.
    (f) VARY the unit(s) online.

    Note that in some cases the program may ask you to mount a disk which is already mounted. It is not necessary to re-mount such disks, they are included in the message in order to tell you which disks to leave mounted when only one of the disks is to be replaced.

(4) Reply 'U' to the program. In the case of an un-recoverable error, cancel the job.

(5) Repeat steps (3) and (4) as necessary to the end of the job.

NOTE: The message "***ANY DISKS***" is designed to give you a choice. You may (1) immediately reply 'U' and ignore the message, (2) immediately reply 'U' and at your leisure vary the units used offline and use them for disks needed by other jobs in the system, or (3) immediately vary the devices offline (and possible mount other disks which may be needed) and then reply 'U' to the program.

180

APPENDIX E

SCHEDULE FOR MIC PRODUCTION JOBS

MIC PRODUCTION JOB RUN SCHEDULES

JOB NAME	JOB DESCRIPTION	RUN FREQUENCY	SCHEDULE		JOB RELATIONSHIP	
			IN	OUT	RUN BEFORE	RUN AFTER
J503P001	ISI-PX CONVERSION	WEEKLY	day-rec'd	ASAP		
J503P002	MARC-PX CONVERSION	WEEKLY	UPON REQUEST	ASAP		
J503P003	SDF-CT CONVERSION	BI-WEEKLY	UPON REQUEST	ASAP		
J503P004	NTIS CONVERSION	BI-WEEKLY	day-rec'd	ASAP		
J503P005	SSIS CONVERSION	WEEKLY	day-rec'd	ASAP		
J503P006	PANDEX PREPROCESS	WEEKLY	day-rec'd	ASAP		
J503P007	CICP PREPROCESS	MONTHLY	day-rec'd	ASAP		
J503P010	MDS PROMAIN	WEEKLY	MONDAY	TUESDAY	J503P011	
J503P011	MDS CURRENT	WEEKLY	WEDNESDAY	THURSDAY		J503P010
J503P012	MAILING LABELS	UPON REQUEST	ASAP			
J503P013	PROFILE CHECK	UPON REQUEST	ASAP			
J503P021	CT CURRENT	BI-WEEKLY	FRIDAY	MONDAY		
J503P030	MDS PROFILE EDIT	WEEKLY	WEDNESDAY	THURSDAY	J503P031	
J503P031	MDS RETROSPECTIVE	WEEKLY	THURSDAY	FRIDAY		J503P030
J503P040	ERIC PROFILE EDIT	WEEKLY	FRIDAY	MONDAY	J503P041	
J503P041	ERIC RETROSPECTIVE	WEEKLY	MONDAY	TUESDAY		J503P040
J503P050	ERIC PROMAIN	MONTHLY	20th-day of ea mo	21st of ea. mo.	J503P051	

MIC PRODUCTION JOB RUN SCHEDULE

			SCHEDULE		JOB RELATIONSHIP	
JOB NAME	JOB DESCRIPTION	RUN FREQUENCY	IN	OUT	RUN BEFORE	RUN AFTER
J503P051	ERIC CURRENT	MONTHLY	21st day of ea mo	1st day of ea mo		J503P050
J503P060	AGRO PROMAIN	MONTHLY	20th day of ea mo	21st day of ea mo	J503P061	
J503P061	AGRO CURRENT	MONTHLY	21st day of ea mo	1st day of ea mo		J503P060
J503P080	SS PROMAIN	BI-WEEKLY	MONDAY	TUESDAY	J503P081	
J503P081	SS CURRENT	BI-WEEKLY	TUESDAY	WEDNESDAY		J503P080
J503P100	PSYCH PROFILE EDIT	WEEKLY	THURSDAY	FRIDAY	J503P101	
J503P101	PSYCH RETRO SEARCH	WEEKLY	FRIDAY	MONDAY		J503P100
J503P900	LIBLOC MAINTENANCE	UPON REQUEST	ASAP			
J503P901	BACKUP DISKS	UPON REQUEST	ASAP			
J503P905	LIBLOC EXCEPTION REPORT	UPON REQUEST	ASAP			
J503P910	TAPE INITIATION	UPON REQUEST				
J503P913	TAPE MAP	UPON REQUEST				
J503P921	MERGE PANDEX	WEEKLY	ASAP			
J503P922	MERGE ISI	WEEKLY	ASAP			
J503P923	MERGE NTIS	BI-WEEKLY	ASAP			
J503P924	MERGE MARC	WEEKLY	ASAP			
J503P925	MERGE CT	BI-WEEKLY	ASAP			
J503P926	MERGE RIE	MONTHLY	ASAP			

MIC PRODUCTION JOB RUN SCHEDULES

JOB NAME	JOB DESCRIPTION	RUN FREQUENCY	SCHEDULE IN	SCHEDULE OUT	JOB RELATIONSHIP RUN BEFORE	JOB RELATIONSHIP RUN AFTER
J503P927	MERGE CIJE	MONTHLY	ASAP			
J503P928	MERGE AGRO	MONTHLY	ASAP			
J503P929	MERGE SSCI	BI-WEEKLY	ASAP			

APPENDIX F

MEETINGS, VISITS, AND PRESENTATIONS

1. PLACE: OSU

DATE: February 9, 1973

PROJECT PERSONNEL: C. S. Craig, B. Bayer

PERSONNEL CONTACTED: J. A. Scott (Imperial Chemical Industries, England)

SUMMARY: Discussed information services and described MIC's activities.

2. PLACE: OSU

DATE: February 13, 1973

PROJECT PERSONNEL: B. Bayer, L. Adkins

PERSONNEL CONTACTED: J. Larson (Chemical Abstracts Service)

SUMMARY: Discussed MIC's services and our method of constructing a library location table.

3. PLACE: OSU

DATE: February 21, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: OSU Reference Librarians Monthly meeting.

SUMMARY: Discussed the problems of integrating MIC's services into the Libraries overall activities.

4. PLACE: Columbus, Ohio

DATE: February 21, 1973

PROJECT PERSONNEL: C. S. Craig

SUMMARY: Presented paper at the Computer Science Conference, "A Perceptual Evaluation of a Selective Dissemination of Information System.'

5. PLACE: Columbus, Ohio

DATE: February 20-22, 1973

PROJECT PERSONNEL: G. Lazorick, J. Hsu, R. Beaton, C. Yao

SUMMARY: Attended Computer Science Conference

6. PLACE: Philadelphia, Pa.

DATE: March 8, 1973

PROJECT PERSONNEL: G. Lazorick

SUMMARY: Attended the semi-annual meeting of the Association of Scientific Information Dissemination Centers.

7. PLACE: OSU

DATE: March 14, 1973

PROJECT PERSONNEL: C. S. Craig, B. Bayer, J. Hsu

PERSONNEL CONTACTED: E. G. Holley (Dean, School of Library Science, University of North Carolina)

SUMMARY: Demonstrated MIC's system and discussed MIC's services.

8. PLACE: OSU

DATE: March 14, 1973

PROJECT PERSONNEL: G. Lazorick, C. S. Craig

PERSONNEL CONTACTED: M. Weinstock (ISI)

SUMMARY: Discussed MIC's operation and the Institute for Scientific Information's Social Science Citation Index.

9. PLACE: Columbus, Ohio

DATE: March 15, 1973

PROJECT PERSONNEL: G. Lazorick

PERSONNEL CONTACTED: Members of the American Chemical Society

SUMMARY: Chaired session on Information Services at the Chemical Literature Conference of the American Chemical Society.

10. PLACE: Columbus, Ohio

DATE: March 15, 1973

PROJECT PERSONNEL: J. Hsu, R. Beaton, C. Yao

PERSONNEL CONTACTED: Members of the American Chemical Society

SUMMARY: Attended the Chemical Literature Conference of the American Chemical Society and staffed a display booth.

11. PLACE: OSU

DATE: March 21, 1973

PROJECT PERSONNEL: G. Lazorick, C. S. Craig

PERSONNEL CONTACTED: P. L. Holmes (Office for Scientific and Technical Information, England)

SUMMARY: Discussed MIC's operation and plans.

12. PLACE: Columbus, Ohio

DATE: March 27, 1973

PROJECT PERSONNEL: G. Lazorick

SUMMARY: Participated in panel on Specialized Information Systems sponsored by the Central Ohio-American Society for Information Science and Battelle Memorial Institute.

13. PLACE: Dayton, Ohio

DATE: March 29, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: Joint meeting of the Dayton Chapter of the Special Libraries Association and the Southern Ohio Chapter of the American Society for Information Science.

SUMMARY: Gave a talk on two information centers (TIDB at the State University of New York at Buffalo and MIC at OSU) and the lessons to be learned from both.

14. PLACE: OSU

DATE: April 6, 1973

PROJECT PERSONNEL: G. Lazorick

PERSONNEL CONTACTED: Library Directors of the twelve State supported universities in Ohio.

SUMMARY: Discussed MIC and the availabilities of search services to the various universities.

15. PLACE: OSU

DATE: April 6, 1973

PROJECT PERSONNEL: C. S. Craig, B. Bayer, L. Adkins

PERSONNEL CONTACTED: R. Myers (Agriculture Librarian)

SUMMARY: Discussed providing information services based on the Bibliography of Agriculture.

16. PLACE: OSU

DATE: April 12, 1973

PROJECT PERSONNEL: G. Lazorick, B. Bayer

PERSONNEL CONTACTED: E. Howie, Dr. Duncan (Knowledge Availability Systems Center)

SUMMARY: Discussed MIC's operation.

17. PLACE: Cleveland, Ohio

DATE: April 24, 1973

PROJECT PERSONNEL: J. Hsu

SUMMARY: Attended the Computer User's Forum to see recent developments in data transmission and networking.

18. PLACE: OSU

DATE: May 3, 1973

PROJECT PERSONNEL: G. Lazorick, C. S. Craig

PERSONNEL CONTACTED: J. Carter (General Motors Research Center)

SUMMARY: Discussed provision of MIC's services to General Motors.

19. PLACE: OSU

DATE: May 4, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: R. Hanousek (General Electric Electronics Laboratory)

SUMMARY: Discussed MIC services.

20. PLACE: OSU

DATE: May 24, 1973

PROJECT PERSONNEL: B. Bayer

SUMMARY: Conducted two orientation sessions on MIC services and operations for Department of Computer and Information Science.

21. PLACE: New York City

DATE: June 4-8, 1973

PROJECT PERSONNEL: J. Hsu,R. Beaton, C. Yao

SUMMARY: Attended the first National Computer Conference.

22. PLACE: OSU

DATE: June 6, 1973

PROJECT PERSONNEL: G. Lazorick, C. S. Craig

PERSONNEL CONTACTED: J. Hudson (Berkeley Library)

SUMMARY: Discussed MIC's services.

23. PLACE: OSU

DATE: June 8, 1973

PROJECT PERSONNEL: G. Lazorick

PERSONNEL CONTACTED: H. Taroepratjeka (Technology & Development Institute, East-West Center, Honolulu)

SUMMARY: Discussed MIC operations and services.

24. PLACE: OSU

DATE: June 11, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: A. Trassard (Companie Francais de Raffinage, Paris)

SUMMARY: Discussed the MIC systems and services.

25. PLACE: OSU

DATE: June 14, 1973

PROJECT PERSONNEL: G. Lazorick

PERSONNEL CONTACTED: S. K. Martin (Harvard Library)

SUMMARY: Described MIC's services.

26. PLACE: Las Vegas, Nevada

DATE: June 20-21, 1973

PROJECT PERSONNEL: G. Lazorick

SUMMARY: Participated in American Library Association pre-conference on library automation.

27. PLACE: Las Vegas, Nevada

DATE: June 24, 1973

PROJECT PERSONNEL: G. Lazorick

SUMMARY: Presented paper entitled "Library Management of Machine-Readable Data Bases."

28. PLACE: Las Vegas, Nevada

DATE: June 25-29, 1973

PROJECT PERSONNEL: L. Adkins, L. Drake, M. Petry, R. Poli

SUMMARY: Attended the National meeting of the American Library Association.

29. PLACE: Oberlin, Ohio

DATE: July 17, 1973

PROJECT PERSONNEL: M. Petry, B. Bayer

PERSONNEL CONTACTED: 13 people from Oberlin and Whittenburg-Vaughan

SUMMARY: Presented part of a workshop on "Interviewing for Information Needs Diagnosis."

30. PLACE: OSU

DATE: July 18, 1973

PROJECT PERSONNEL: G. Lazorick, C. S. Craig, J. Hsu

PERSONNEL CONTACTED: M. Sugimura (National College of Library Science, Tokyo)

SUMMARY: Discussed MIC's services and software.

31. PLACE: OSU

DATE: July 20, 1973

PROJECT PERSONNEL: L. Adkins, L. Drake, M. Petry, B. Bayer

PERSONNEL CONTACTED: Jennifer Cargill (Miami University, Oxford, Ohio)

SUMMARY: Presented workshop on profiling.

32. PLACE: OSU

DATE: August 3, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: Ten graduate students

SUMMARY: Explained MIC services to members of a Research Methods course.

33. PLACE: Washington, D.C.

DATE: August 14, 1973

PROJECT PERSONNEL: C. S. Craig

SUMMARY: Presented paper entitled "The Effectiveness of Opinion Leadership in the Promotion of Information Services" at the Annual Meeting of the American Marketing Association.

34. PLACE: OSU

DATE: August 16, 1973

PROJECT PERSONNEL: C. S. Craig, S. Miller

PERSONNEL CONTACTED: B. Kenney (Graduate School of Library Science, Drexel University)

SUMMARY: Discussed MIC operation and services.

35. PLACE: OSU

DATE: August 20, 1973

PROJECT PERSONNEL: L. Drake, C. S. Craig

PERSONNEL CONTACTED: G. Fretwell (University of Massachusetts Library)

SUMMARY: Discussed MIC's services with emphasis on service in the social sciences.

36. PLACE: Washington, D.C.

DATE: September 21, 1973

PROJECT PERSONNEL: G. Lazorick, B. Bayer

PERSONNEL CONTACTED: E. Weiss, R. Lee (National Science Foundation)

SUMMARY: Discussed the MIC proposal for a fourth year of service to faculty and students of The Ohio State University.

37. PLACE: OSU

DATE: September 25, 1973

PROJECT PERSONNEL: L. Drake, B. Bayer

PERSONNEL CONTACTED: R. Lee (National Science Foundation)

SUMMARY: Described the MIC operation and services.

38. PLACE: OSU

DATE: September 27, 1973

PROJECT PERSONNEL: L. Drake

PERSONNEL CONTACTED: OSU Department of Chemistry

SUMMARY: Presented a seminar on the MIC services.

39. PLACE: Columbus, Ohio

DATE: October 11-12, 1973

PROJECT PERSONNEL: L. Drake, R. Beaton, J.Hsu, S. Miller, M. Petry, R. Poli, C. Yao, B. Bayer, G. Lazorick

SUMMARY: Described the MIC services with the attendees at the Ohio Library Association Annual Conference.

40. PLACE: OSU

DATE: October 12, 1973

PROJECT PERSONNEL: L. Drake, B. Bayer

SUMMARY: Spoke to a Conference for ERIC Tape users on MIC's operation and services.

41. PLACE: OSU

DATE: October 16, 1973

PROJECT PERSONNEL: R. Poli

PERSONNEL CONTACTED: OSU Department of Agronomy

SUMMARY: Conducted an orientation seminar on MIC services.

42. PLACE: OSU

DATE: October 16, 1973

PROJECT PERSONNEL: B. Bayer, M. Petry

PERSONNEL CONTACTED: V. Hampel (Lawrence Livermore Laboratory)

SUMMARY: Discussed MIC services.

43. PLACE: OSU

DATE: October 16, 1973

PROJECT PERSONNEL: B. Bayer, J. Hsu

PERSONNEL CONTACTED: Y. R. Chadha (Publications & Information Directorate, New Dehli, India)

SUMMARY: Discussed MIC services and software.

44. PLACE: OSU

DATE: October 19, 1973

PROJECT PERSONNEL: S. Miller

PERSONNEL CONTACTED: E. Olsen (university of Maryland Library School)

SUMMARY: Discussed the MIC system and services.

45. PLACE: Los Angeles, California

DATE: October 21, 1973

PROJECT PERSONNEL: G. Lazorick

SUMMARY: Presented a paper at the ASIS Conference and participated in a panel discussion.

46. PLACE: OSU

DATE: October 23, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: OSU Heads of Department Libraries

SUMMARY: Discussed the impact and interaction of the MIC services on the 23 department libraries of OSU.

47. PLACE: OSU

DATE: October 29, 1973

PROJECT PERSONNEL: L. Drake

PERSONNEL CONTACTED: Members of a Home Economics Research course

SUMMARY: Conducted a seminar on MIC services.

48. PLACE: OSU

DATE: November 1-2, 1973

PROJECT PERSONNEL: G. Lazorick, B. Bayer, J. Hsu, L. Drake, R. Beaton, M. Petry. (Also, J. T. Bonner, Jr., Vice President for Educational Services; R. Force, Head, Education Library; L. Perk, Reference Librarian.)

PERSONNEL CONTACTED: D. Wax, D. Morrison, A. Benefeld, J. Gardner (Northeast) Academic Science Information Center - NASIC)

SUMMARY: Discussed MIC and its services, the relationship of information centers like MIC within an academic library and to the academic community as a whole, the mechanics of providing services to a diverse community within OSU, marketing services, the duties of an information specialist and how he or she interacts with patrons, and the software developed to provide the services.

49. PLACE: MIC

DATE: November 7, 1973

PROJECT PERSONNEL: L. Drake

PERSONNEL CONTACTED: Members of the Senior faculty of OSU Libraries and members of the MIC staff.

SUMMARY: Conducted a seminar on the search techniques used for ERIC searches - the use of descriptors and identifiers, title words and authors - and the ways of combining parts of descriptors, explained the assignment of ID numbers for ERIC patrons, and answered questions on specific problems in profiling.

50. PLACE: MIC

DATE: November 9, 1973

PROJECT PERSONNEL: B. Bayer, R. Poli, L. Drake

PERSONNEL CONTACTED: Thirty-three members of a library class from Kent State University.

SUMMARY: Explained MIC, its services, and the impact of computer-based services on traditional librarianship.

51. PLACE: OSU

DATE: November 14, 1973

PROJECT PERSONNEL: S. Miller, R. Beaton, M. Petry

PERSONNEL CONTACTED: OSU Library Circulation staff supervisor

SUMMARY: Discussed MIC operations and their effect on OSU Public Service Operations.

52. PLACE: MIC

DATE: November 15, 1973

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: J. Morrie, (College of Environmental Science and Forestry at Syracuse University, State University of New York)

SUMMARY: Discussed MIC services and their application to environmental science.

53. PLACE: MIC

DATE: November 28, 1973

PROJECT PERSONNEL: N. Cooper

PERSONNEL CONTACTED: G. Kalbouss (Slavic Department, OSU)
V. Traikov (Bulgarian Academy of Sciences)

SUMMARY: Explained MIC's services, discussed U.S. Academic Library cooperation; did retrospective search for G. Kalbouss.

54. **PLACE**: MIC

DATE: November 29, 1973

PROJECT PERSONNEL: S. Miller

PERSONNEL CONTACTED: Six OSU Librarians

SUMMARY: Discussed MIC and its services as part of a five-day professional orientation program of the OSU Libraries.

55. **PLACE**: MIC

DATE: November 30, 1973

PROJECT PERSONNEL: N. Cooper

PERSONNEL CONTACTED: Three students from Kent State University Library School.

SUMMARY: Described MIC's services, including search methods.

56. **PLACE**: OSU

DATE: December 4, 1973

PROJECT PERSONNEL: S. Miller

PERSONNEL CONTACTED: E. Ross (Ohio Department of Community Development)

SUMMARY: Discussed MIC's operations and services and possible use by the Department of Community Development.

57. **PLACE**: OSU

DATE: January 10, 1974

PROJECT PERSONNEL: R. Poli

PERSONNEL CONTACTED: P. Blosser and thirty members of a senior course in education

SUMMARY: Discussed MIC and ERIC services with students preparing for student teaching.

202

58. PLACE: OSU

DATE: January 11, 1974

PROJECT PERSONNEL: R. Poli

PERSONNEL CONTACTED: D. Mathews and 18 members of a graduate course in Physical Education.

SUMMARY: Discussed the MIC services for graduate students.

59. PLACE: OSU

DATE: January 17, 1974

PROJECT PERSONNEL: B. Bayer

PERSONNEL CONTACTED: Sixty members of the OSU area-wide Task Force on Learning

SUMMARY: Discussed the innovative aspects of MIC services, how the services fit into the Library's philosophy of making the OSU collection as accessible as possible, and how faculty and students can make use of the services.

60. PLACE: OSU

DATE: January 29, 1974

PROJECT PERSONNEL: L. Drake

PERSONNEL CONTACTED: Forty-five members of a graduate course in education.

SUMMARY: Explained library services in general and MIC services in particular.

61. PLACE: MIC

DATE: January 30, 1974

PROJECT PERSONNEL: B. Bayer, R. Poli

PERSONNEL CONTACTED: S. Gencer (Coordinator, Management Institute Project, Istanbul, Turkey)

SUMMARY: Discussed MIC services and furnished information to him through two services to help him set up a library on management information.

62. PLACE: Columbus, Ohio

DATE: January 31, 1974

PROJECT PERSONNEL: R. Poli (with G. Guthrie)

PERSONNEL CONTACTED: S. Goldstone (Deputy Director, Office of Program Analysis, Department of Economic and Community Development, and Chairman of Energy Commission for the State of Ohio.)

SUMMARY: Discussed the possible establishment of an energy data base for the State of Ohio, perhaps utilizing the MIC data bases and demonstrated the MIC search capabilities.

204